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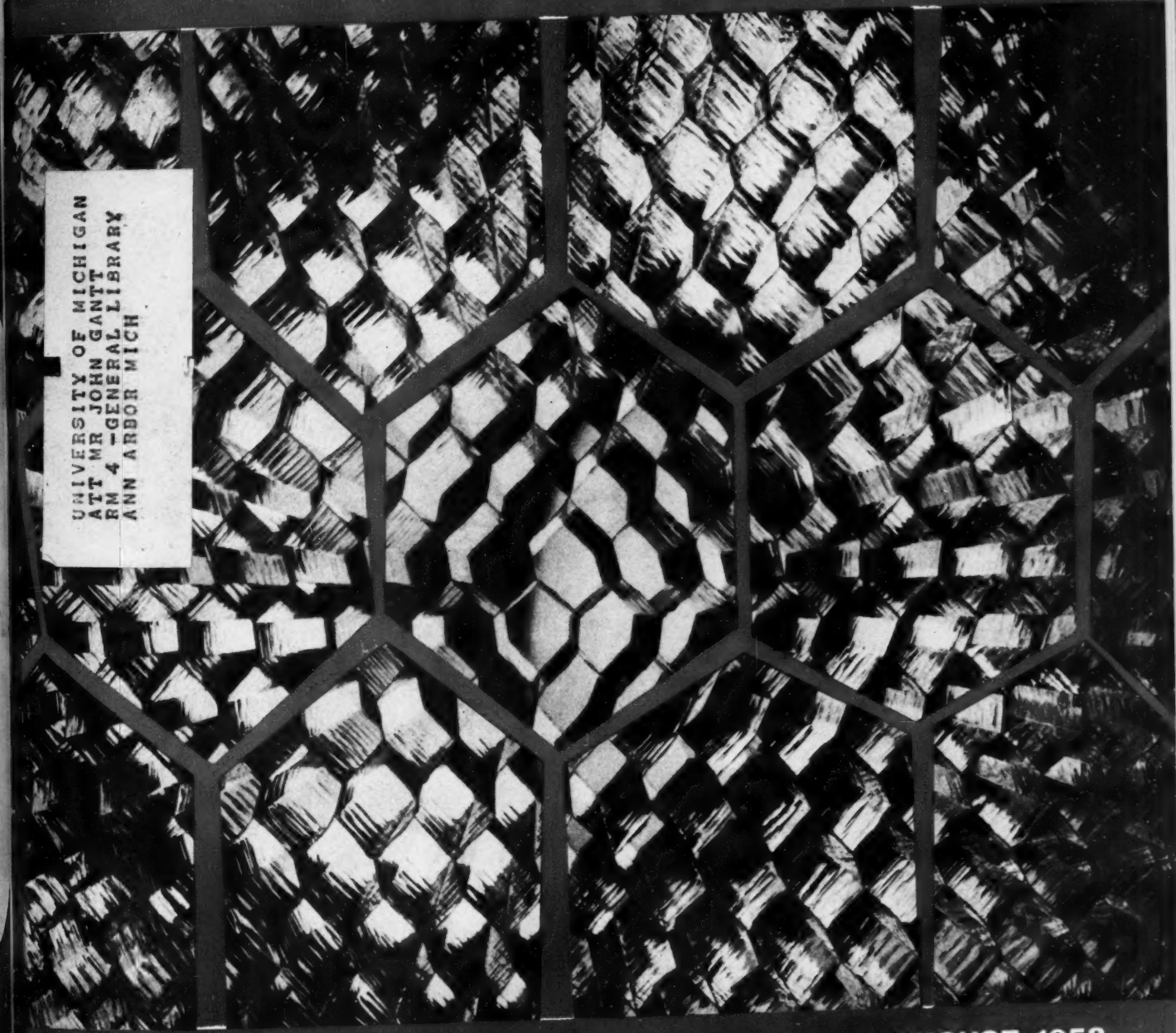

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AUGUST 1958

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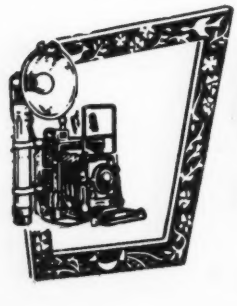

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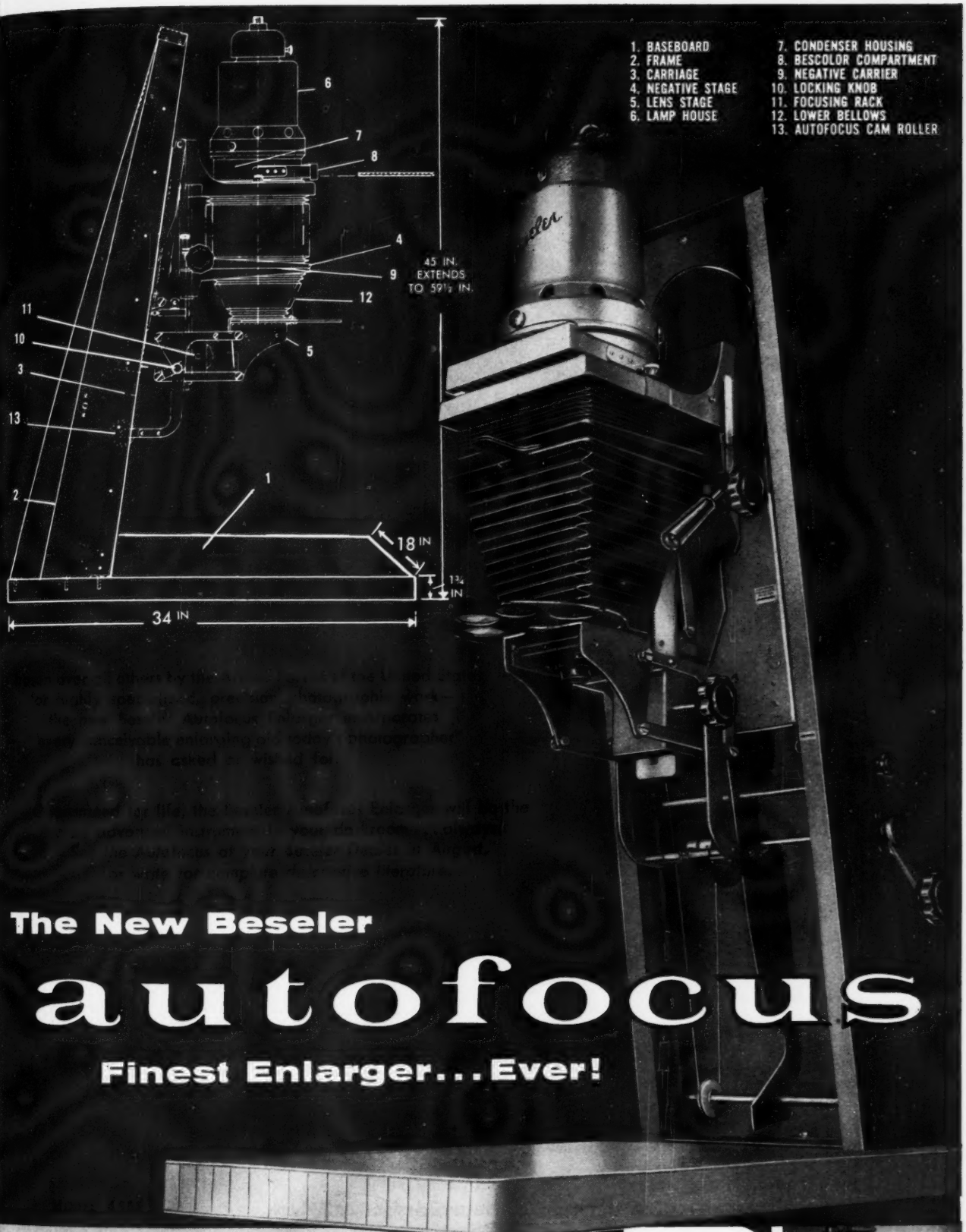

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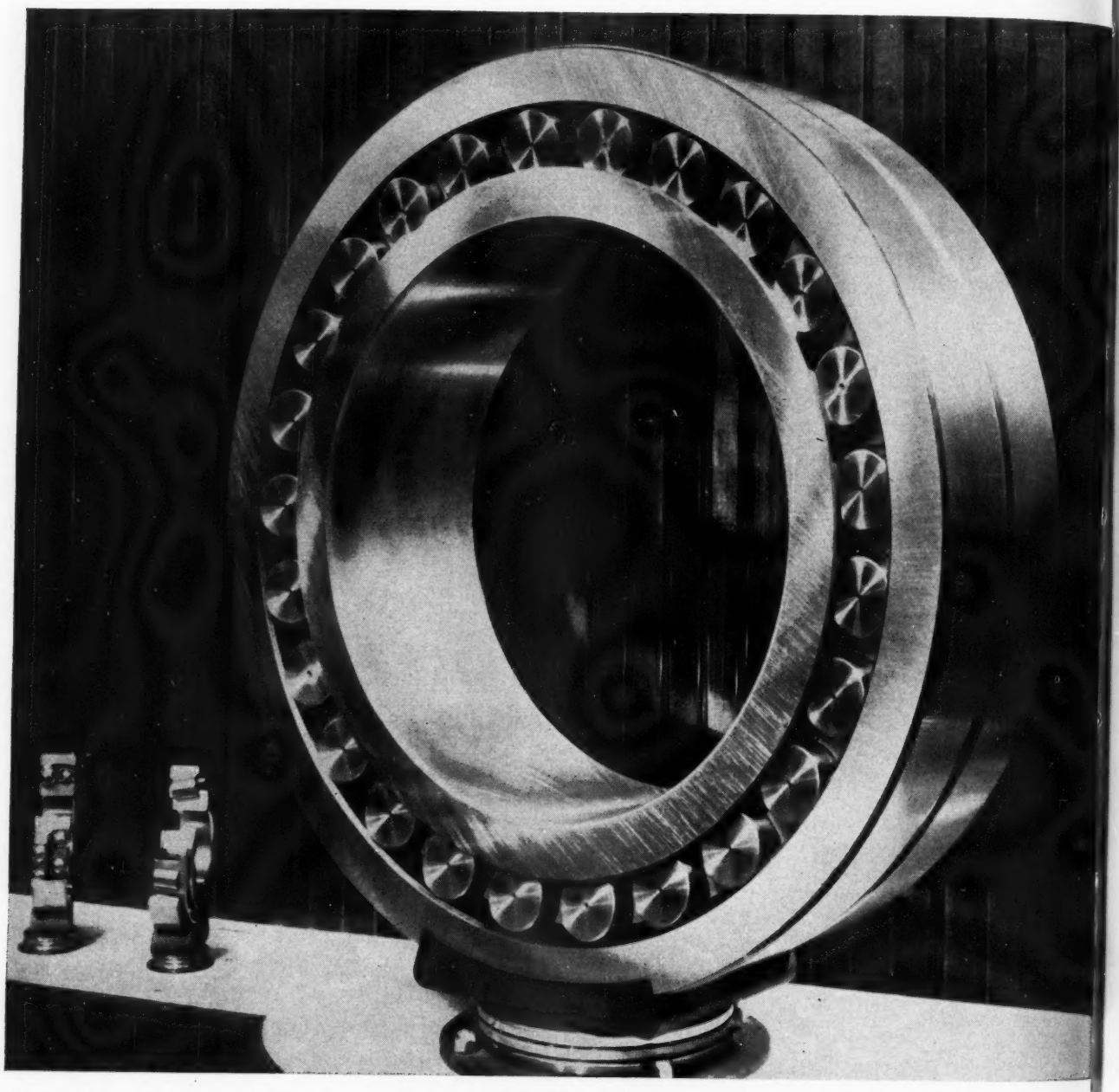

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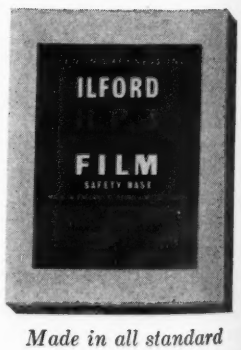

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THE MAGAZINE OF PHOTOGRAPHY AT WORK IN BUSINESS, INDUSTRY, GOVERNMENT AND SCIENCE

AUGUST 1958

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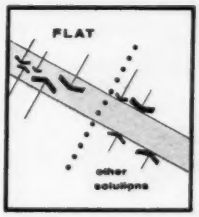

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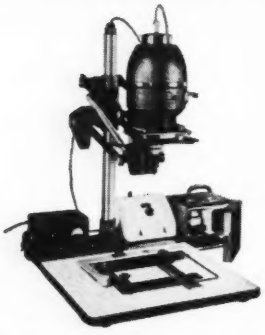

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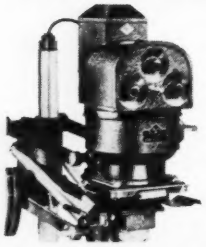

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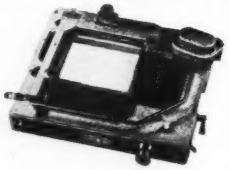

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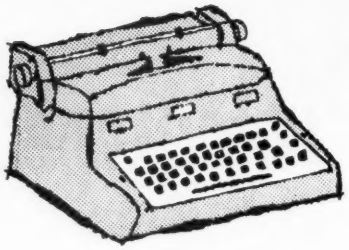

Editor's Mail

Old Subscriber

For the last six months I find that I have not been receiving your excellent publication. I truly am desirous of receiving INDUSTRIAL PHOTOGRAPHY because of the vast amount of information which you put in it. I have almost all of the past four years' issues and have had them shipped to Japan so that I and my personnel can refer to them for information pertinent to specific needs. Therefore I'm sure you can see that they are used.—Capt. Ben W. Fagen, U. S. Air Force.

Subscription renewed.

Buyers Please!

We have about 200 reels of color film which are obsolete and are wondering whether the film, the 1,200 foot reels, the empty metal cans, and the fibre shipping cases have any value.

Is there any source anywhere which might be interested in these items?—E. C. Helfrick, The Sherwin-Williams Co., Cleveland 1, Ohio.

A list of sources has been forwarded to reader Helfrick.

On 35mm Color Photography

We have to copy on 35mm film some colored posters for use in lectures. Which will give better results—daylight film with blue flood light bulbs or tungsten with the proper filter for flood lights? There will be some daylight in the room where we have to work.—Frank H. Miller, Champion Paper and Fibre Company.

We would not recommend daylight film of any sort with blue floods for this assignment. You will find that most manufacturers suggest blue photofloods only as a fill light where daylight is the major illumination. Our suggestion would be to use photofloods or 3200°K lamps and either Tungsten Anscochrome or professional type Kodachrome. Anscochrome can be used with 3200°K lamps (at proper voltage) without any filter. Kodachrome is designed for use with photofloods without filter. As to daylight coming into the room, we suggest masking the copy board area so that only the illumination of your lights is hitting the subject. □

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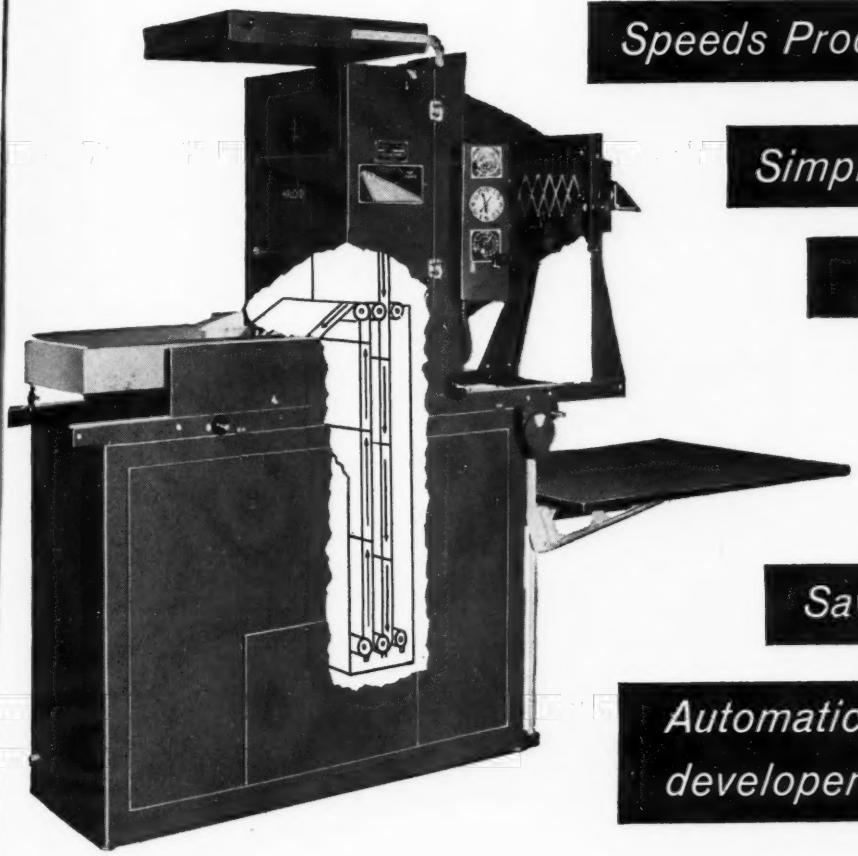

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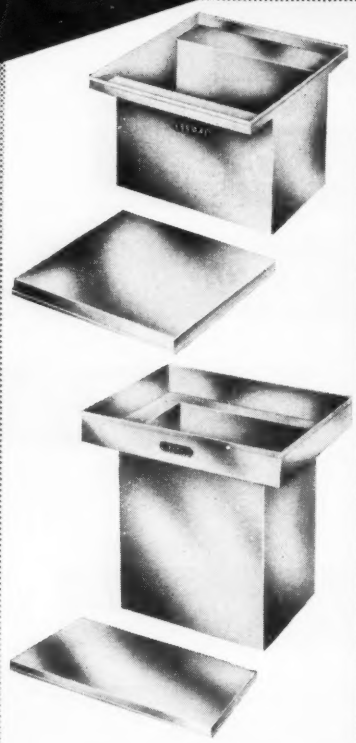

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JAMES J. HUGHES, Executive Editor

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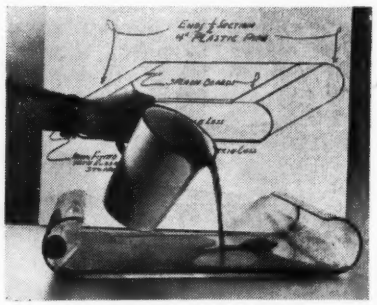
We needed a special size hypo tray and decided to make one from plastic rather than the more expensive stainless steel.



The end pieces are half sections of 4" pipe, side walls and bottom of ¼" Plexiglas and Acrylite solvent furnished with the Plexiglas was used as the cementing agent. It is resistant to practically every darkroom solution except extremely hot water. — *James Hampson, Arkansas Fuel Oil Co., Shreveport, Louisiana.*

MARKING NEGATIVES

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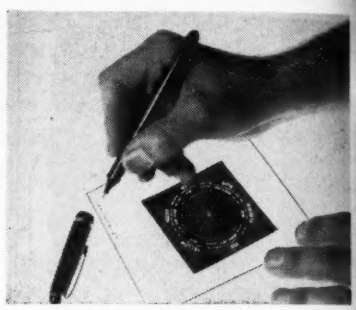

from the negative presents a problem. We found the answer in a local art store—the Rapidograph drawing ink fountain pen. It is available with four different points and holds enough ink to mark several hundred negatives.—*Ross Sanddal, Hughes Tool Co., Houston, Texas.*

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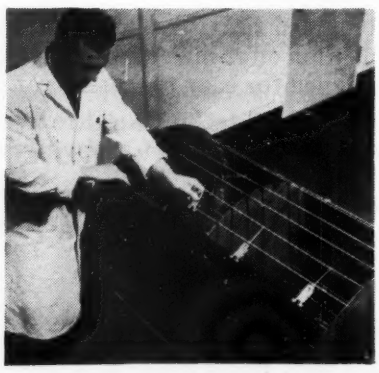

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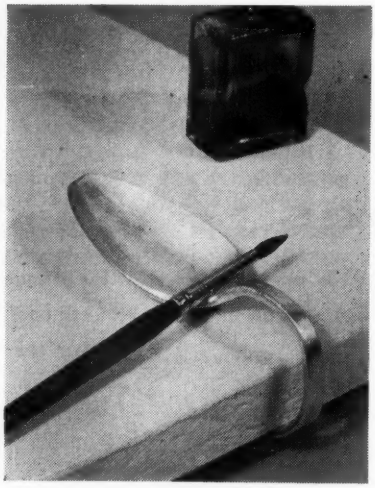

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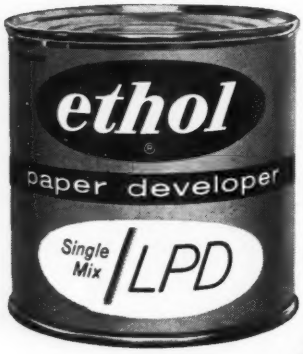

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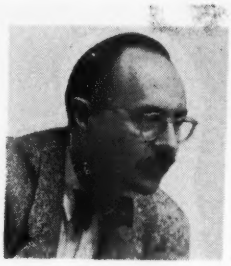

Industrial Workshop

by DAVID B. EISENDRATH, JR., Technical Editor

Detecting Gremlins

Some of the most interesting and intriguing reading might be developed around the detective work that top notch photo technicians get into. In the past few months I wrote about gremlins, but only about the ones that are currently troublesome and are cropping up in numerous places. There are all kinds of gremlins that occasionally appear and have been with us for years. The man who can recognize them, identify them and know how to eliminate them is rare. He must be well versed in all phases of photographic principle and be gifted with strong powers of deduction and reason.

While writing for three or four photographic and technical publications, and serving as a consultant in photographic application and technique, I have found it profitable to learn the answers to many of the problems that plague photographers. The leading film manufacturers have specialists, too, who spend their time running down the peculiar little phenomenon or flaw or fault baffling photographers. They are bright guys with healthy imaginations.

Tail Catcher

For example, recently I wrote about the gremlin known as the *tail-catcher*. This creature lurks inside of roll film cameras and sometimes causes the end of the protective black backing paper to curl around on itself on the spool and not release properly. This happens in many different kinds of cameras and with different kinds of film. I mentioned some of the measures that have proven helpful in defeating the *tail-catcher:* making sure that rollers and spool studs were properly lubricated, winding the last exposure out of the camera rapidly, and adjusting critically the supply spool hold-back spring, particularly in those cases where this spring is shaped like a broad "U" and is right in the middle of the roll. If this spring is bent properly, so that it barely clears but doesn't touch the paper backing just as the tail is released, it should defeat the gremlin in 99 out of 100 cases.

Taped Tail

Now, who discovered all of these things? The technical people whom I consider to be photographic detectives. A technician at Eastman Kodak, for example, used a bit of ingenuity to study the spring adjustment. He couldn't get inside the camera, of course, so the next time he had an experimental run-thru of film in which the tail-catcher was at work, he went into the darkroom and carefully Scotch-taped the tail into position just as it was caught. Then he cut off the rest of the tail and roll of film with a razor blade and sealed it for processing. When, with the lights on, he examined the caught tail, he discovered that the spring had held the folded insert tab so that it couldn't release properly and had wound up on itself.

Other bafflers have required keen deductive powers, good research and logic. Dick Kinstler, head of the excellent photo department at The Procter & Gamble Company, reported that P & G had problems in processing color film. At its main photographic laboratories the results were excellent; however, at a laboratory in a suburb the color processing was not satisfactory, film coming through with tints, discolorations or some sort of stain. Studies showed that the emulsions used were the same; even the same people and kinds of equipment were used to do the processing.

continued on page 42

Once-in-a-lifetime deal on PRO JUNIOR* saves you $40!

Here's what you get: **Regular Price**

PRO JUNIOR TRIPOD	**$150.00**
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The most imitated—but never duplicated professional Tripod

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These are some of the PRO JUNIOR features:

- Simplified camera attaching method.
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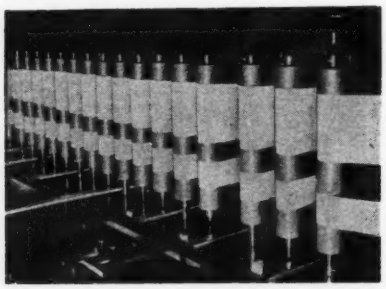
Circle No. 516 on Post Card

New Equipment and Materials

Keep posted on the latest developments in the photographic field. Each new product and supply item featured below has a key number. If you want more information on the subject — without any obligation — circle that same number on the Readers Inquiry Card on page 61

Film and Paper Processor 101

A continuous processor for both film and paper is announced by *H. Joe Meyer Co.* Called the Springfield Dual 8-10, it is a double-single strand processor which features four flow-meter type replenishers



for developer, short-stop, hypo fix, and neutralizer. Direct positive plumbing with PBC chemical resistant material is said to eliminate the danger of contamination and insures positive drain and wash run-off. The processor is said to handle up to 16 feet per minute, producing 4200 2½ x 3½ prints per hour; 2100 5 x 7 prints per hour on a 5-inch stand; 1050 5 x 7 prints per hour on a 7-inch strand; or 675 8 x 10 prints per hour. The processor tank is guaranteed for five years against defective workmanship and/or materials.

Streak Camera 102

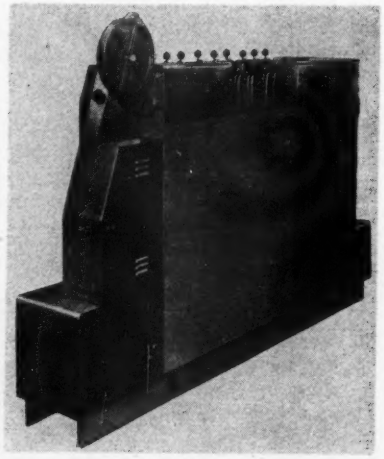
The new *Beckman & Whitley* Model 194 Continuous-Writing Streak Camera can serve as a research tool for the study of self-luminous transient events such as explosions, shock-tube studies and flash-tube and spark discharge phenomena. Continuous writing means that it is not necessary to synchronize the event with the position of the sweeping mirror. The camera has a blast shutter, lens and capping-shutter assembly and a mirror-turbine and film-holding assembly. Standard film arranged for daylight loading and unloading, is held in a curve concentric to the mirror axis so that focal distance is constant throughout the sweep. Total length of the useful record produced is approximately 18.5 inches. This is identified on the finished film by three fiducal marks automatically placed in the margin. Rotating mirrors are triangular and driven by one of several available turbine assemblies, the fastest of which has a speed range of 200 or 5500 revolutions per second and is driven by helium gas. The maximum writing rate is approximately eight millimeters per microsecond.

High Pedestals 103

Mole-Richardson Co. is manufacturing Sky-Hi Pedestals incorporating additional height for lighting equipment high over the subject. The pedestals are available in three sizes: Baby, 162 inches high; Junior, 137 inches high; and Senior, 137 inches high and braced.

New Film Processor 104

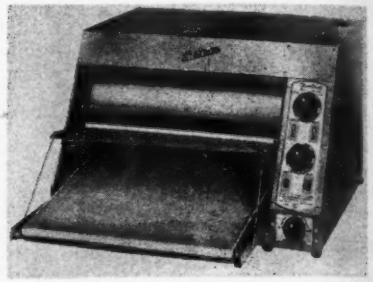
A new model of the Houston Fearless Labmaster 16mm black and white film processor has been announced by *Houston Fearless Corp.* Of modular design, it will process negative or positive film



and, with the addition of an extra unit, also process reversal film. It is fully automatic and operates up to 40 f.p.m. Principal features of the Labmaster model are stainless steel tanks, built-in refrigeration system, turbulation pumps on developer tanks, built-in air compressor and clutch-drive film transport that is said to eliminate film breakage. Negative-positive model is priced at $4,175.

Print Dryer 105

A new Beseler Model 1217K dryer by *The Charles Beseler Company* features a terminal timer that allows continued rotation of the dryer drum for a period up to 30 minutes with the heat off for



efficient cooling period and a safety interlock that guarantees that the drum mechanism will not operate until and unless the dryer apron is fully extended. Dryer width is 23¼", height is 15", and the depth is 24". Current is AC, 900 watts, 110-115 volts. Shipping weight is 76 pounds. Price: $345.

Filmovara Lens 106

Bell & Howell's variable-focus lens for 16mm movie projectors is said to solve many problems caused by varying projection distances and screen sizes. Called *f*/1.6 Filmovara lens, it is said to be instantly and continuously adjustable to any focal length between 1¾" and 2¼". The Filmovara is of a 9-element design, highly corrected, and coated for maximum light transmission. The barrel styling features anodized light gold aluminum, black, and bright aluminum fluting. Price: $79.95.

New Photographic Plate 107

Eastman Kodak Company has developed what is said to be the world's flattest commercially-produced photographic plate. Called the Kodak Super Aerographic Positive Plate, the product is claimed to eliminate the factor of glass plate flatness in the business of aerial mapping. With a surface flatness tolerance that is 35 times closer than the normal aerographic plate tolerance of .0007 inches per inch, it is said the plates will bring unusual accuracy to the task of

cutting mountains down to size via aerial mapping.

Traid 450 Fotoscope **108**

The Traid 450 Scope Recording Periscope, developed by the *Traid Corporation*, is said to provide a method for photographing cathode ray tube and auxiliary data. An illuminated data box contains a 24-hour clock with sweep second hand, a 4-digit counter, a data slate, and four neon coding lamps. All auxiliary data is recorded on the film record.

Desensitizer and Lacquer **109**

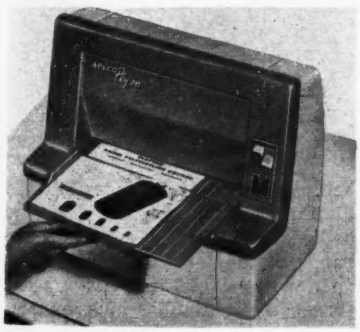
Lithoplate, Inc., a subsidiary of *Harris-Intertype Corporation*, is offering Harris Alum-O-Lith Desensitizer and Harris Alum-O-Lith Developing Lacquer. The Desensitizer is said to assure a black image and clean, long run. The lacquer is said to provide trouble-free operation with no scumming.

Weatherstripping **110**

Vinl-Stop all-vinyl weatherstripping by the *Duraflex Co.* is said to provide complete lightproofing for darkroom doors.

Laminator **111**

American Photocopy Equipment Company's Ply-On Laminator is said to be the first desk-top office unit of its kind. The machine permanently covers one or both sides



of a paper with thin, clear pliable sheets of plastic film, which acts to protect, preserve and beautify the encased document. The Ply-On measures 10½-inches x 15-inches. It features push-button or foot-pedal control.

Film Cleaner **112**

Kem-O-Kote, a solution which cleans all kinds of photographic film, as well as magenta and contact screens, and, at the same time deposits a protective coating, is announced by *Kem-O-Graphic Company*. It is said that the coating applied prevents scratches and abrasive damage to the negatives. Other features claimed are that it eliminates static, dries instantly, has no optic effect on film, is non-

burdened with equipment fatigue?

you're sitting right on the ANSWER

SINAR

8x10"
5x7"
4x5"
2¼x2¼"
2¼x3¼"

SINAR EXPERT shown here with 8x10", 5x7" and 4x5" interchangeable backs.
SINAR Rapid Adapter attaches to 4x5" back for 2¼x3¼" and 2¼x2¼" formats.

the SUPER VERSATILE VIEWCAMERA with FIVE INTERCHANGEABLE FORMATS

The unique *"Construction-unit"* design of this custom crafted Swiss Viewcamera is your key to unlimited photographic versatility. While using only ONE basic Viewcamera, the SINAR STANDARD, you simply interchange backs and bellows for any one of five formats from 8x10" down to 2¼x2¼".

ONE set of SINAR accessories, many with dual functions, serves all five formats making it ideally suited to extreme wide-angles and distant views, macro and micro photography, copy work, color separation, photomontages, 45° angle shots, etc.

And the SINAR's extremely lightweight, compact and completely collapsible precision construction assures convenient portability and instant set-up, in the studio or on outdoor location.

In this ONE camera with *"finger-tip-control"* accuracy you'll find the embodiment of FIVE separate cameras *...relief for the overburdened photographer!*

SINAR — ONE VIEWCAMERA FOR: any Format, any Lens, any Adjustment, any Special Application, any Job, any-Where!

	SINAR STANDARD Basic Viewcamera	SINAR EXPERT Complete Outfit
4x5"	$349.00	$579.00
5x7"	$429.00	$679.00
8x10"	$649.00	$929.00

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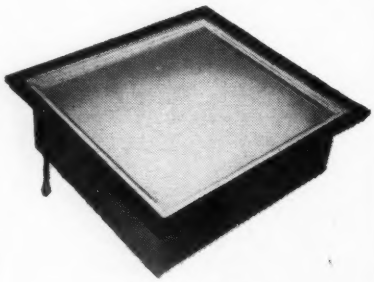
PRODUCTS

MODEL K-D
STRIPPING TABLE



MODEL ASL
STRIPPING TABLE

MODEL K-D
FILING CABINETS

CONTACT
PRINTING LAMP

- Exposure Frames
- Stripping Tables
- Filing Cabinets
- Contact Printing Lamp
- Equipment for Offset Shop

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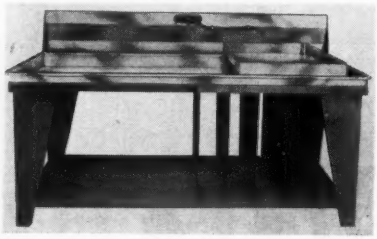
corrosive and non-flammable and eliminates brittleness and results in less curling. Price for 16 ounce can: $3.75.

Developing Sink 113

The *Bar-Plate Manufacturing Co.* has developed the Bar-Plate Imperial Developing Sink. The sink



features a 20-inch swivel spout, storage shelve, tray holders to accommodate four full-size trays and a separate drain dumping compartment to dispose waste solution.

Yashica 635 114

The *Yashica* 635 takes twelve 2¼ square pictures on standard 120 film or 20-36 exposures on 35mm film. It features semi-automatic film advance for both film sizes with rewind provision for 35mm. Other features include twin *f*/3.5 lenses, shutter speeds from 1 to 1/500 second, field lens focusing screen, M and X flash sync. and delayed action timer. Price: $69.95 including case.

Anscochrome 115

Super Anscochrome Tungsten Type is now available from *Ansco* in the popular 120 size.

Hot Splicer 116

Hollywood Film Company announces the availability of its new HFC combination table model hot splicer to splice 16mm, 17½mm, 35-32mm, Cinemascope and 35mm film on one set of pins. Addi-

tional features are a special scraping block, a scraping blade adjustment block, a method of heating the machine to splicing temperature in ten minutes which is thermostatically controlled and the ability of the operator to double scrape. Model number is FSC-105. Price: $329.50.

Direct Projector 117

The *Camera Lucikon* Model C Direct Projector permits direct projection onto heavy illustration board from any opaque copy, transparencies, or objects. It is said to eliminate completely all transferring operations and allows the artist, designer or engineer to work on his finished artwork or drawings or heavy illustration board. Lights are concealed in the head of the unit to eliminate glare. It provides for four element color correction and features a *f*/4.5 Wollensak lens. Price: $645.

50mm Lens 118

A new Schneider Xenon *F*/1.9, 50mm lens with automatic diaphragm is now available with the *Exakta* Light-Meter IIa camera. This new Xenon features a diaphragm which regulates a visible depth of field band. With this lens, the sharpest zone area surrounding the principal subject can be used by the photographer, assuring him of sufficient definition before and

behind the point of focus. As the diaphragm stop is closed down, the depth of field area enlarges. The range of the depth of field is shown on a white band just above a different white band which contains the aperture setting numbers. The marker for both is located on the mount between both bands. Range is from infinity down to 1.8 feet. The smallest diaphragm stop is *f*/22.

Focusing Devices 119

Two new close-up focusing devices have been announced by the *Kling Photo Corporation*. Designed for the Golden Jubilee Baldessa 35mm cameras, the Baldessa Proximeter I covers distances from 38" to 20" and the Proximeter II covers distances from 20" to 13". Coupled together, both Baldessa Proximeters permit close-ups between 13" and 10" with a maximum reproduction ratio of 1:5. Each Baldessa Proximeter combines, in one unit, a supplementary lens which fits over the camera lens, and an opti-

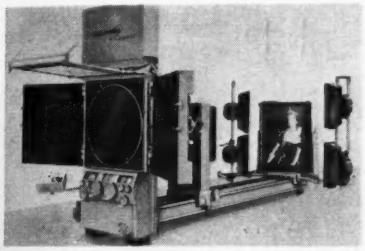
cal wedge which corrects the camera range/viewfinder image for critical focusing and parallax-free viewing at the extremely close distances. The lens shade/filter holders used with the regular camera lens can also be used with the Baldessa Proximeters.

Projection Lamp **120**

A new type projection lamp which assures brighter pictures and permits entirely new design concepts in motion picture and slide projectors is announced by the *Westinghouse* lamp division. The Focus-Lok projection lamp has a prefocused alignment which results from a new base and socket construction.

Horizontal Camera **121**

Repro Graphic Machines, Inc., selling agents for *Klimsch & Co.*, announces the new Klimsch Regent, a medium priced horizontal



camera. It features tape focusing and the overall design has been simplified.

Exposure Meter **122**

The *Sekonic Electric Co.* has announced the new exposure meter, the Sekonic Pet, designed for use with Polaroid Land Cameras and cameras with LVS exposure systems. The Sekonic Pet features two separated scales, one calibrated in Polaroid numbers, from one to nine, the other in light value numbers from four to 19.

New DuPont Film **123**

DuPont has just announced the development and availability of an improved "Superior" 2 motion picture film. The film has been designated Fine Grain "Superior" 2 motion picture film, type 936. Its characteristics include fineness of grain, speed of development and an emulsion hardness which is said to permit processing at temperatures up to 125°F. Exposure indices are 80 and 64 respectively.

Torquer Model No. ARTQ-1 **124**

The Aeroflex Corporation has developed a new torquer device for actuating large stabilized platforms mounting heavy aerial cam-

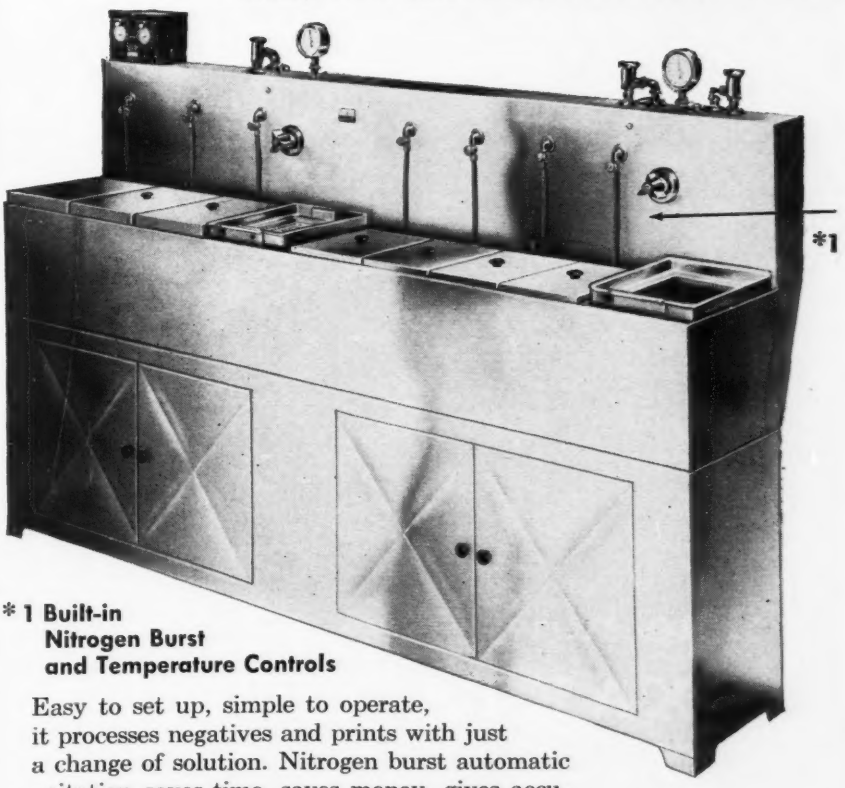
continued on page 60

uniform prints

Photo by Rick Waite, Boyer Studio

calumet color processor

guarantees uniform development of each batch of film . . . along with uniformity from batch to batch



*** 1 Built-in Nitrogen Burst and Temperature Controls**

Easy to set up, simple to operate, it processes negatives and prints with just a change of solution. Nitrogen burst automatic agitation saves time, saves money, gives accurate, uniform quality. An investment that quickly pays for itself. Three sizes for color materials . . . 8 x 10 - 11 x 14 - 16 x 20.

The price is unbelievably low: $1475 up for a complete processor

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Manufacturers of Cameras, Photographic Processing, Studio and Laboratory Equipment

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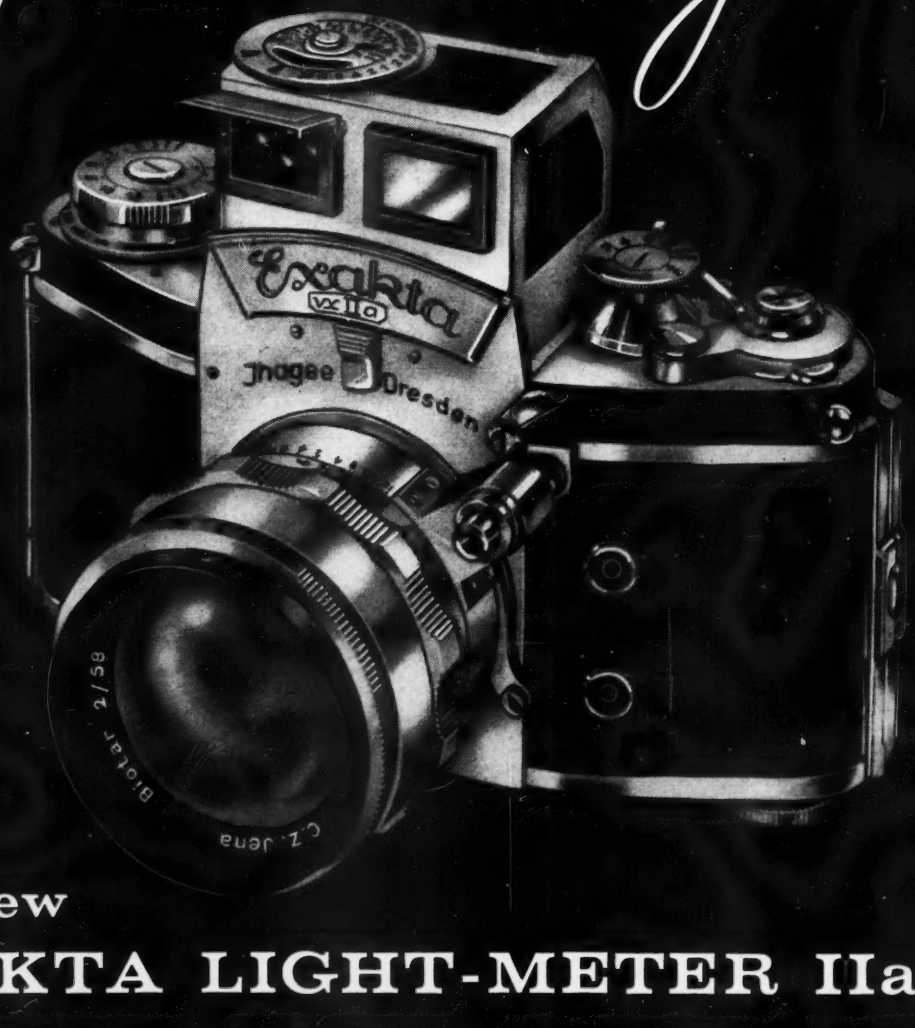
Announcing...



The new
EXAKTA LIGHT-METER IIa

For 1958, we proudly present the remarkable New Exakta Light-Meter IIa camera, featuring an ultra-modern, built-in photo electric cell exposure meter which solves every exposure problem for you—immediately and effortlessly! The instant you aim your Exakta Light-Meter IIa camera at the subject, the light-sensitive electric cell indicator points to the correct exposure! It's that simple. The working range of the Exakta exposure meter assures highly accurate readings. The A.S.A. film speed scale has an extensive range of settings. The meter's shutter speed and aperture scales correspond to Exakta's shutter and lenses.

Also built into the Exakta Light-Meter IIa camera is another instrument that gives you additional picture-taking quality insurance . . . a new separate-window tubular optical viewfinder! Invaluable in taking instantaneous flash and sport pictures, the new viewfinder swiftly frames and centers the subject you are shooting.

The Exakta Light-Meter IIa camera is available with built-in Exposure Meter and Penta Prism eye-level Viewfinder, Split-Image Rangefinder and 58-mm., F/2.0 Carl Zeiss Jena Biotar lens with Automatic Diaphragm . . **$429.50**

See the new and exciting Exakta Light-Meter IIa at your dealer today. Write for free colorful brochure.

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Exclusive Factory Appointed Representative in the U.S.A. for Sales & Service of Exakta and Exa Cameras

Circle No. 527 on Post Card

Industrial Photography

VOL. 7, NO. 8 AUGUST, 1958

THE NEW WINONA COURSE

August 25 to 29 is the date of a most significant new training course in photographic education—a program in "Industrial Photography Management". Offered by the Winona School of Photography, this special course takes cognizance of a new type of executive whose stature in industry has increased tremendously over the past dozen years. To the best of our knowledge this will be the first course specifically designed for the manager or prospective manager of the industrial photographic department. It will cover basic problems of management, organization and control (complete details are on page 65).

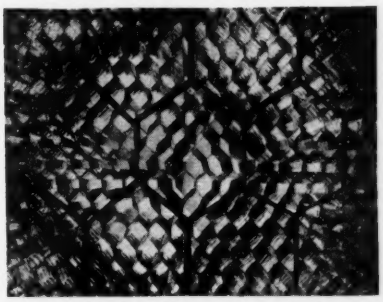
INDUSTRIAL PHOTOGRAPHY itself was an outgrowth of the expansion of the many areas of functional photography and helped give expression to this important role in our national economy. So, too, this Winona course will serve to recognize and give stature to the "photographic department manager".

We extend best wishes to the course and these pioneer students. We hope this is just the beginning of a regular educational program which will develop qualified photographic executives who will in turn give added impetus to all Industrial Photography.

Jim Watkins

Publisher

COVER PHOTO



The photograph on the front cover is of aluminum structural material used in the manufacture of aircraft. A prize winner in the Industrial Class of the 11th Annual Graflex Photo Contest, it was taken by James B. Minnich of Fairchild Aircraft with a 4x5 Speed Graphic, 1/200 and *f*/64 (approx.) Minnich used a flash bulb for back lighting to obtain the unusual "sun-burst" effect.

PHOTO CREDITS

Pages 18 and 19, Dick Conrad, The Photography Penthouse; Pages 20 and 21, Editorial Service Bureau, Eastman Kodak Company; Pages 22 and 23, Public Information Dept., Sperry Gyroscope Company; Pages 24 and 25, Rogers & Smith; Page 26, Ralph Selitzer; Page 27, Robert E. Goode; Pages 28 and 29, Angelo Serratoni, Engineering Photographic Dept., Chrysler Corporation; Page 30, Shell Chemical Co.; Page 36, GM Photographic; Pages 38 and 39, Dr. Robert W. Colwell; Page 44, H. E. Edgerton; Page 57, The Babcock & Wilcox Co.; Page 70, Public Relations Department, Consolidated Edison Co.

Spectrum of Human

Drug firm uses movie and montage technique to show effect of new tranquilizer drug.

by DICK CONRAD
The Photography Penthouse

The life of an industrial photographer is far from a life of ease. Often, a photo which delights management results only after long hours of contemplation, perspiration and frustration by the photographer. A case in point is an advertising montage illustration currently being used by Pfizer Laboratories Division, Chas. Pfizer & Co., Inc., for its new tranquilizer, Ataraxoid.

Pfizer's concern was to find an effective way of illustrating the emotional needs of a patient who requires the ethical drug. Their

Emotions Captured in One Photo

solution was to capture the spectrum of human emotions, from depression to elation, in a single, subjective photograph. Using a pattern of figures of the same individual, montaged together, would depict the sequence of emotional changes resulting from the use of the product.

Pictorial Symbol

Given this assignment we decided to start with a vague, weakly-defined image of the individual in a state of apprehension and combine it with a series of progressively sharper defined images till we arrived at the final sharply defined, physically erect and relaxed image of the individual. This we felt would express the effects of the product in a single, graphic and easily grasped pictorial symbol. The problem, once the picture idea was worked out, was getting the montage on paper.

Our first concern was multiple exposure on a single negative. When multiple exposures are made, the usual result is one good expression on one multiple exposed negative and another good expression on another, with no effective way of combining the one good expression on each into one good print. We decided, therefore, to get a whole series of different expressions, edit them and montage them together and then choose the expressions most suitable for the kind of picture we wanted.

In addition, we decided to change the contrast of the different figures, as they were montaged together, since this would help to express the emotion photographically.

Camera was panned to follow the action of the model during sequence.

The plan was for the models to turn away from the camera to start, and then move in towards the camera, facing it more and more. They were to enact an entire sequence starting with anxiety and changing their expressions gradually until they personified the state of well-being at the end of the sequence.

Movie Technique

The best way to picture this was by use of a movie technique adapted to still photography, with photographs taken in sequence at fairly frequent intervals. By panning the camera we were able to follow the action of the model with greater fidelity, and at the same time get a large number of frames from which to select the best expressions to be montaged into a single picture.

Our equipment was a Praktina FX camera, fitted with the electric motor and an accessory 50-feet 420-exposure bulk-film magazine. We lit the area in which the model would move, in a semi-flat way so that he or she would not step out of the light during his motions, and create shadows that could not be controlled. However, in the part of the sequence in which the model was acting out the depressed state, lighting was deliberately kept at a slightly lower key to emphasize the connotation of anxiety.

The type of film to be used presented another problem. We needed a film that would combine fine grain, since the negatives would be enlarged considerably, with sufficient speed under incandescent lighting so that sequences could be shot at approximately $f/8$ and 1/200th second, to stop motion. We tried a number of different films and

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A split-frame motion picture is used to demonstrate the improvement of a new production method over an old one.

Split-Frame—Not So 'Hidden' Persuader

Engineers sell management on improved production techniques; use split-frame movies to contrast old v. new side by side.

HOLLYWOOD has no monopoly on movie tricks. The man behind the industrial motion picture camera is helping engineers to sell management on new, improved production methods and is dramatically demonstrating new product advantages through the technique of shooting split-frame movies.

The technique involves exposing the right or left half of the 16mm roll of film; then rewinding back to the starting point and exposing the other half. The result when projected: two scenes on the same screen.

The experience of a metal parts manufacturer in spotlighting an improved manufacturing method demonstrates the effectiveness of split-frame movies.

Time and motion study engineers at the company were at odds with their management over which was the better way for an operator to machine a metal part. The engineers tried reports and diagrams to tell their story: the new way would result in substantial time savings and increased productivity. Management, however, questioned the expense of changeover.

So, the engineers trained their heavy artillery —the motion picture camera—on the problem and made a split-frame movie. First, the engineer on the job made certain that both operators would work at the same speed; since the two operations performed by the two workers were to be compared, it was only fair that each operator perform at the same level of skill and effort. Thus, any difference in time would be directly traceable to the difference in method of performance.

Using a Cine-Kodak Special II camera, he inserted a mask which split the frame behind the lens. The appropriate half of the eye piece was blocked off with a strip of paper. By blocking off the left half of the eye piece and using a

Blowup from split-frame shows typical workers using old and new methods.

right hand mask, the left half of the film was exposed. Variations on split-frames are simple since six masks (vertical or horizontal, top and bottom, oval or circle) are made for this purpose.

After completing the sequence, the film was rewound. As the footage counter approached the point where the first sequence started, the photographer removed the lens to check a pre-penciled frame that marked the starting point (actually a pre-determined perforation number). The mask was then changed so that the previously shot half of the film was covered and the unexposed footage opened to light passing through the lens. On the next location, lighting conditions, camera angle and lens-to-subject distance were duplicated as closely as possible. Mechanically, this completed the film.

Side by side, it showed both ways of doing the job. Man-

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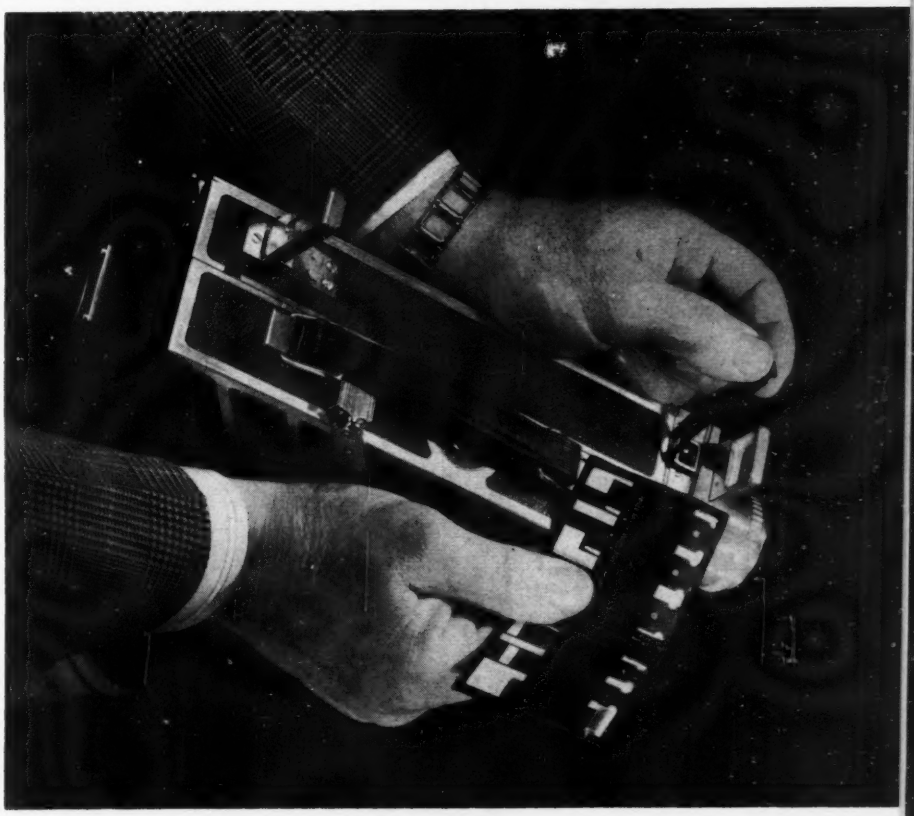
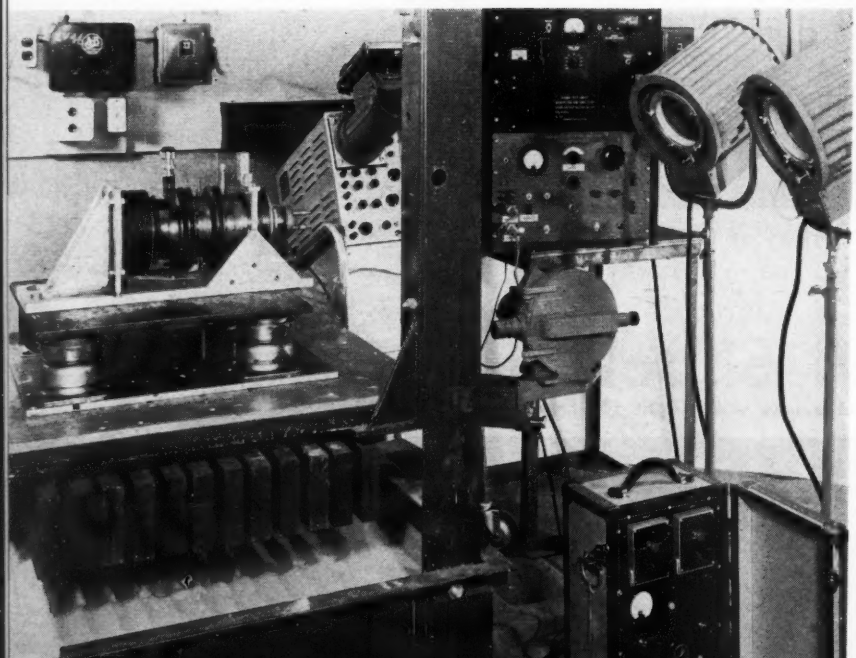
Special masks which split the frame are placed behind the camera's lens.



by JAMES HUGHES
Executive Editor

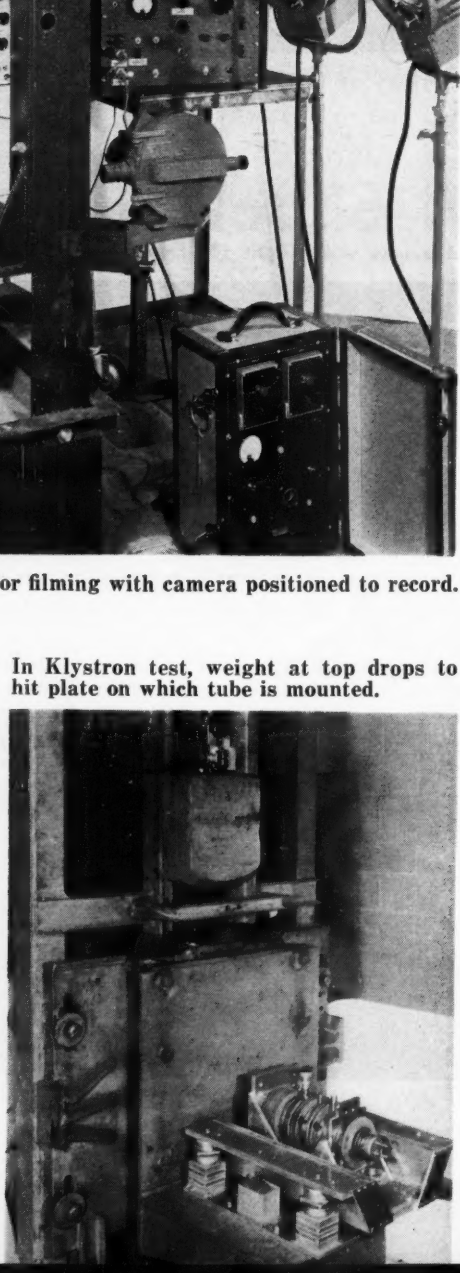
Blow-ups show vibration starting . . .

High-Speed Motion Pictures



A drop test ready for filming with camera positioned to record.

In Klystron test, weight at top drops to hit plate on which tube is mounted.



At the Sperry Gyroscope Company, Great Neck, N. Y., the high-speed motion picture camera is a much valued instrument for studying shock and vibration tests. Engineers in the Electrical Measurements Laboratory report that it provides more complete qualitative and quantitative information than can be obtained by other devices. This information is applied to the development of gyro-compasses, radar systems, klystrons, anti-aircraft weapons and missiles.

High-speed motion photography has proven especially valuable to engineers trying to get at the root of equipment and component failures. Footage of units undergoing tests which simulate environmental shock and vibration shows how and at what point failure occurred. Besides revealing the quality of particular pieces, the film records private data helpful in solving future design problems.

A recent representative failure problem involved the breakdown of the delicate tungsten wire heaters (filaments) of Sperry SAL-39 Klystron hi-amp radar tubes. Responsibility for isolating the cause fell to Robert D. Hawkins, a senior engineer with a photographic background. He covered the Japanese war crime trials as a press photographer, and since joining Sperry has played a major role in the development of the company's high-speed motion photography techniques.

Hawkins took the problem to

and reveals breakdown of delicate filaments as simulated shock builds.

Examine Vibrations

the shock machine section of the lab. There the tube was mounted on a Barry Medium Impact Shock Machine for a drop test. In this test, shock is applied by dropping the base to which the tube is affixed into a bed of sand. The base is dropped in guides so that it will always land in exactly the same place and position for convenience of the camera.

Use Critical Focus Mount

A Fastax high-speed camera loaded with 16mm film was mounted on a Kodak camera stand and positioned to record the tube at the moment of impact. For the kind of critical focusing demanded by this study, Hawkins used a critical focus mount manufactured by the Photographic Analysis Company, Clifton, N. J.

Illumination was provided by a pair of water-cooled Wollensak Fastlite 1000-watt lamps. According to a Weston Model 757 illumination meter, these lamps provide about 3000 footcandles. Because of the intense heat which they generate, their reflectors are focused from the rear.

Records 8,000 F.P.S.

As the shock was applied to the tube, the camera recorded its effect at a rate of about 8,000 frames per second on DuPont Type 931A film.

The processed film showed that the heater "waved" in its mount but did not break.

Hawkins now knew what the filaments *could* take—but that wasn't what he was after. He wanted to know what they *couldn't* take—and why! So Hawkins decided to subject the heater to a severer shock test.

He moved the tube to the Navy High Impact Shock machine. This apparatus subjects components and equipment to the toughest of the Navy's required shock tests, generating impact shock equivalent to dropping a 400-pound object five feet. The shock results from a dropped weight hitting the plate upon which the tube is mounted.

The camera setup used to record the effects of this test was similar to the one used for the previous test. This trial did the trick—the heater broke in half.

The processed film was run through a Vanguard Motion Analyzer by a technician who analyzed the motion of the heater under impact. In the analyzing process, the speed of the film becomes a function of time and can be synch'd to the motion of the heater to determine and plot on a graph data which tells how much time elapsed before the heater failed under impact.

Based on information provided by the films of the Navy High Impact Shock test, it was concluded that the failure was a design failure. The faulty condition was subsequently remedied.

Klystron tubes also undergo vibration tests which are monitored by high-speed cameras. In such a trial, the tube is mounted on a Model C25H, N B Manufacturing Company vibration machine set before a Fastax camera (two cameras may be used to cut operating time during the test and to give two views of the subject). The tube then is forced-vibrated in cycles varying from 10 to 2000 cps while the camera is running. Using a 16mm projector film analyzer, engineers then make a visual study of the processed footage of the critical areas in resonant motion. Once again the function of time recorded on the film vs. the vibration cycle can be plotted from the data contained on the film.

Standards Are Set

All test samples when under duress are on mounts similar to those used for final installation.

Therefore, the amount of shock or vibration withstood as recorded by the Fastax with fiducial-mark attachment permits "limits" or standards to be applied to equipment.

Time marking is applied directly to the film through a timing mark generator that flashes a neon tube intermittently along the edges of the film.

Thus, with the fiducial marking attachment, all motion from frame to frame can be measured and plotted if desired.

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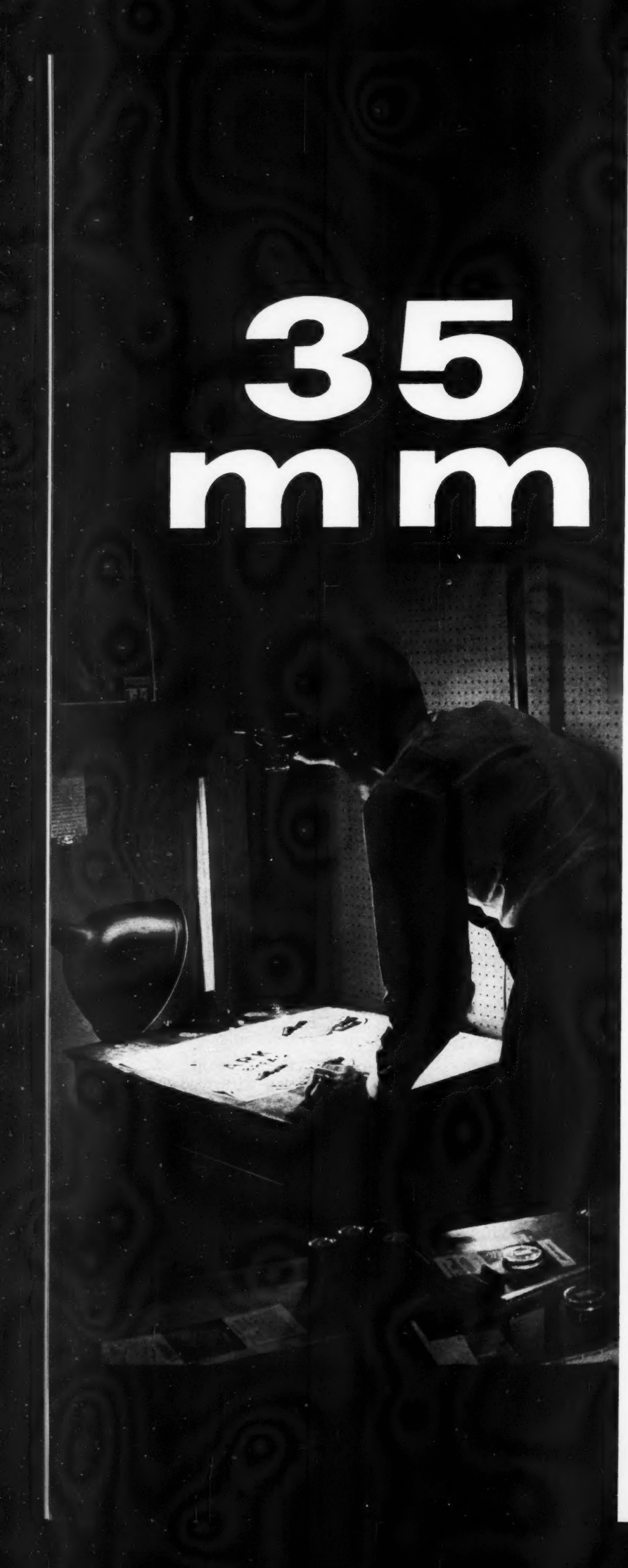

by HARVEY BERGREN
Rogers & Smith

Project

When the Kansas City office of Rogers & Smith Advertising Agents decided upon a slide presentation for a large bakery firm, they never dreamed they would end up creating their own complete slide photography department, but that's exactly what happened.

The agency's single initial objective was to produce with outside help a 35mm slide presentation with tape recorded sound that would reveal the C. J. Patterson Company's campaign to its executives and sales force. The project became double-faceted when it turned out that the script the client liked would require 260 slides. Some rapid figuring showed that the photography needed to produce 260 slides if done externally would push the cost out of sight for a "one-shot" program. Figuring they would run into the same problem many times in the future, R & S decided to take the bull by the horns and set up their own slide photography department.

The author, an experienced amateur photographer, was commissioned to buy the necessary equipment. The key purchase was a single-lens reflex 35mm Exakta IIA camera. This model has a basic focusing range of from 2½ feet to infinity. Since a great deal of our copy photography was shot at considerably closer distances (down to 5 inches), auxiliary optical equip-

Agency quest for slide presentation results in unexpected expansion into a complete photo department.

Grows and Grows

Equipment used by Rogers & Smith.

ment was necessary to extend the focusing range of the camera. Either the lens of the camera had to be extended through a bellows or tubular arrangement, or else close-up lenses had to be used.

We chose Tiffen close-up lenses (about $2.00 each). We had to purchase a Number 1, 2 and 3 lens because each is used for a different distance. Number 1 is used from about two to three feet, #2 from about one to two feet and #3 for close work. All three lenses may be used simultaneously for extremely close work. They are held in place by retaining rings. It takes only a few seconds to switch close-up lenses, and by organizing art work to be photographed by sizes, a minimum of lens changing is necessary.

Overall Responsibility

The author was also invested with the responsibility of shooting all the pictures for the Patterson presentation. The pictures included shots of artwork, point-of-purchase material, products, displays and copy. My "studio" was a corner of the agency's art department. Subjects too big for the copy stand were placed face up on the floor and shot in that position. For all shots the camera was mounted on a straight-pole Graflarger camera stand.

In most cases, artwork and cutouts were simply placed on colored paper and the picture composed for the best artistic value. No paste-up was required.

Since duplicates cost about 30 cents a slide, we found it much cheaper to make plenty of originals when we needed dupes. Quality of the original is usually better than dupe quality, anyway.

Type F Ektachrome was used exclusively. Lighting consisted of three 3200° Kelvin floods with an 82-C filter used to balance the color temperature. Film processing was done at a local color laboratory featuring 24-hour service.

The tape-recorded "sound track" for the slides was produced at the conclusion of the shooting. Music, multiple voices and sound effects were all used to a dramatic advantage and, R & S is convinced, added a great deal to the over-all effectiveness of the slide pitch.

We own and use a push-button operated Voice of Music tape recorder with a tape speed of 7½" per second. Although the entire slide presentation took three hours, we used only three rolls of tape because half the program was handled by narrators and speakers. The program was arranged to give us plenty of time to change tapes between speakers. Should the program have been entirely on tape, we would have used two recorders.

The size of our presentation

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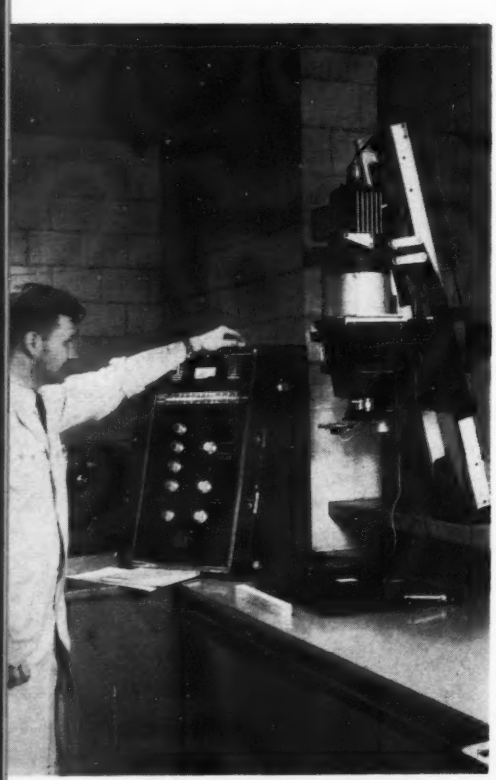
Sound track is recorded to accompany the three hour slide presentation.

LIFE Goes to a Tri-Color Party

Electronic color computer proves that it can automatically compensate and correlate variables in color printing.

by RALPH SELITZER
Assistant Editor



Hank Ehlbeck, member of Life's color lab, "zeros in" the density of the negative on the Simmon Omega Tri-Color Computer. Photo electric cell attached to the automatic filter turret determines density.

In a continuing effort to perfect photographic methods and techniques, the technicians at Life Magazine's color lab have been familiarizing themselves with a tri-color computing system that may revolutionize Kodacolor printing. The Simmon Omega Tri-Color Computer is designed to offer time-saving assistance to the color technician just as calculating machines provide accurate shortcuts for the mathematician.

As the technician regulates the computer's dials, the computer will automatically compensate for the variables present in Kodacolor printing. Thus the Tri-Color Computer incorporates a system for low-cost testing and color previews of the finished print that replaces the old system of numerous test prints produced by complicated trial and error procedures, and sometimes by sheer guess work.

William Sumits, chief of Life's photo lab, hopes to put the computer to work in the near future on the selection of the magazine's cover photographs when made from intermediate color negatives. These negatives can be analyzed and the finished print fully corrected through the use of the computer. Now cover photographs are selected from black and white photostats and prints.

Life's crew is also experimenting with the computer because, as Herb Orth, head of the color lab, explains, "Negative color film will probably one day be the universal film for both black and white and color." From negative color film you can either make a black and white print, a color print, or a color transparency. Perhaps the only reason negative color is not being used now as a universal film is because it is comparatively slow and the resolving power too poor.

The electronic color computer automatically provides correct exposures, compensating for the color balance and density of the negative, the color temperature of the light used in exposing the original negative, or the type of filter with which the picture was taken, the size

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A test print is being analyzed in the unit's color comparator.

Regular Camera Equipment Converted for Copy Work

A time and cost saving shortcut for limited reproduction assignments.

by ROBERT E. GOODE

At one time or another in the life of almost every photographic department, the question of purchasing a special copy and process camera has come up. Admittedly, this type of camera is best suited for copy and reproduction assignments but when such assignments are infrequent the cost of purchase often seems unwarranted.

The experience of numerous industrial photographers has shown that regular camera equipment—if it is reasonably rigid and has a lens suitable for copy work—can be adapted for satisfactory use where copy and reproduction requests comprise a minority of the department's work load. The copy material is placed on a wall or easel and illuminated for proper exposure.

In many cases such a camera is an old one that has been retired from active service and must be squared up to achieve usable results. There is a simple, yet highly accurate and inexpensive, method of squaring which involves two or three mirrors made up to fit the particular camera being used. For an 8x10 camera, total cost of a set of mirrors is about $2.00.

Two mirrors of ordinary silvered polished plate glass, without frame, are essential. A third may also be used or one of the others can be used for double duty.

The first mirror, 1/16″ thick, fits snugly against the camera box when the back is removed. Two lines are scribed across the silvered side, with a scratch awl or other sharp pointed tool, one vertical and one horizontal, perpendicular and intersecting crossing at the center. The lines must be scribed heavily enough to go through the silvering and appear clearly on the mirror face.

For maximum accuracy the lines should be as thin as possible while still visible enough for the squaring process. With an 8x10 camera the width will be approximately 1/100″ but in practice .001″ per inch of focal length above 10″ F.L. must be added to get the necessary visibility at extreme distances. All the silvering is removed at the intersection from a circle of about ¼″ in diameter. A convenient way to do this is to punch

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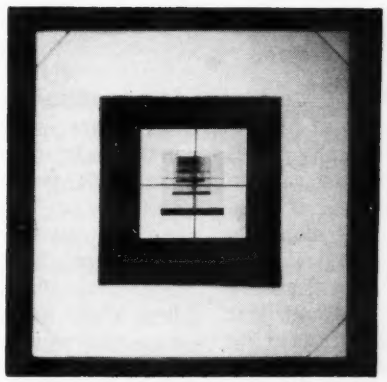
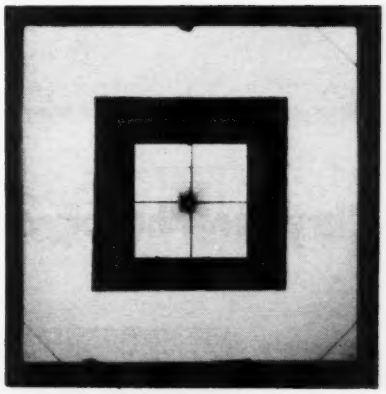
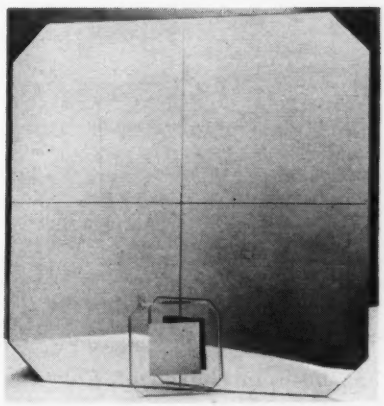






Top photo shows the image of the two mirrors as seen when in use. The displaced images indicate the camera is not properly aligned. In center photo, images are shown as seen when the camera is correctly aligned. Bottom photo illustrates the three mirrors used in aligning cameras or enlargers. The large mirror clearly shows the center line and viewing aperture.

Technical Trends

by GEORGE ASHTON

A NEW LENS TYPE

Radically new types of photographic objectives actually reach the stage at which they can be marketed only rarely. It has long been known, for example, that the use of aspherical surfaces would offer the designer an extra degree of freedom. But the difficulties of manufacturing aspherical surfaces have, up to fairly recently, been such that they were generally used only for condenser lenses for slide projectors, where the requirements are not so stringent as they are for photographic objectives.

However, a little more than a year ago, Elgeet of Rochester began to market a wide-angle lens for narrow-gauge movie cameras which did, in fact, incorporate aspherical glasses. This lens is the Golden Navitar.

In *Photo-Technik und-Wirtschaft* for May 1958, Heinz Kilfitt, the well-known designer of the Kilar and Makro-Kilar range of lenses, outlines for the first time what would seem to be a useful halfway type of lens glass—something between an aspherical surface and a conventional spherical surface. He calls the new type of lens form bispherical and this name describes its form rather aptly.

In a bispherical glass the outer part of the lens has one radius of curvature and the central portion of the glass has a different radius of curvature which gives a rather flatter curve. The point of transition between the two curves is quite abrupt. The use of such bispherical glasses in lenses of the triplet type gives good image quality at apertures which are wide for lenses of

continued on page 59

Chrysler Photographer Produces a 360° angle 'big' picture;

Angelo Serratoni has been in charge of Chrysler Corporation's Engineering Photographic Department for quite a while. Recently, he grew visibly upset when one of the company's public relations men said a very unkind thing, "Ange, you don't ever think *Big* . . . you miss the big picture." Angelo vanished for a whole day and everyone assumed he was off pouting. But, no, he was simply making a big picture (shown above)! This 360° angle view taken from within a new Chrysler gives the effect of a motorist swiveling his head completely around inside the automobile. Mounted at eye level behind the steering wheel, the camera used was a rare circuit-type whose standard seven and one-half inch lens was replaced with a 100mm wide-field *f*/6.3 lens to obtain a depth of focus comparable to

Sipley on Patents

by DR. LOUIS W. SIPLEY

PHOTOGRAPHIC APPARATUS

If we accept the old saying that all things come in threes, we cannot be too surprised to find the patent covering the Multiple Image Motion Picture Camera described in last month's INDUSTRIAL PHOTOGRAPHY followed by two new patents also concerned with apparatus for the production of multiple or composite photographs.

The first of these patents bears the simplest of all possible titles: Photographic Apparatus. The inventor amplifies this in his first sentence by explaining that it is "an improvement in cameras for making composite photographs of a plurality of subjects." One use of this invention is in the field of identification photography, where it may be found desirable to combine personal data, a thumb print, a photographic portrait and also an additional image to make forgery difficult. The camera includes built-in lights for illuminating the person to be photographed through the center lens and also has a plate on which a filled-in data card can be placed and copied on the back of the film through a second lens within the camera itself, such lens having its own shutter. Provision also is made for the use of transparent plates or similar material bearing outlines of a desired form through which the image passes from the lens to the film.

U. S. Patent 2,830,512: A. J. Nagel, Louisville, Ky.

MACHINE FOR PHOTOGRAPHING SIMULTANEOUSLY A PERSON AND ONE OR MORE RELATED DOCUMENTS

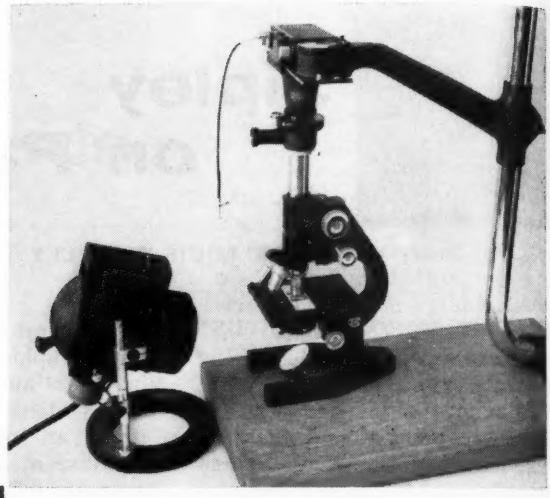
The thought expressed in the second paragraph of this, the

continued on page 50

Obtains Depth of Focus Comparable to That of Human Eye

that of the human eye. A gear calibrated to the focal length of the lens and to the rate of speed the film travels past the lens aperture rotates the camera. When a key-wound spring in the camera is released, a king-sized film strip measuring six inches high and ten feet in length moves across a narrow one-eighth inch aperture slit that serves as a focal plane shutter. It takes less than 14 seconds for the camera to rotate in a complete circle. Fast panchromatic film is used. The finished photos are used by the engineering department to accurately measure the vision areas of the windshield, side and rear view windows. The illusion of distortion created by looking at the photo on a flat surface disappears when the picture is bent into a semi-circle and held in front of the eyes. □

Root-Parasites Beware! A-V Helps Farmers



Slide kits are major weapons in the Shell Chemical Co. war against the nematode menace.

by MITCHELL M. BADLER
Managing Editor

Shell Chemical Company recently proved that spreading the "word" through the countryside is as important to agricultural scientists as to itinerant preachers.

Shell research has shown the damage caused by nematodes, worm-like root parasites, and come up with some effective control measures. To get this information out, Shell launched a series of four regional nematology workshops. Unfortunately many agriculturists can not take the time to attend workshops and, to get the information to them, Shell turned to audio-visual demonstrations.

Regional Differences

Filmstrips and motion pictures were ruled out because of budget problems and the great differences in farming crops and practices in various parts of the country. Because of portability, compactness, cost and versatility, 35mm slides got the demonstration job.

Damage photographs were selected by Dr. Stan Benedict from outside sources such as the U. S. Department of Agriculture and state universities. Micro-photographs showing the actual parasite were taken by Shell photographer C. W. McBeth using a Leica with a Micro Ibso attachment.

The attachment is equipped with a conical extension tube, a correction lens giving an initial magnification of ⅓X, Compur shutter, reflecting focusing magnifier, Periplan 10X eyepiece and two wire cable releases. It screws onto a ground glass copying attachment which is attached to the camera. The camera lens is removed before the copy attachment is added.

McBeth's light source was a microscope illuminator with 100-watt bulb. A graduated iris diaphragm controlled the light reaching the specimen. Film was Daylight Kodachrome. Readings were taken with a G. E. light meter (hood off) from the ground glass.

Choose Admaster Prints

From the slides and photos assembled by Dr. Benedict, 72 were turned over to Admaster Prints, Inc., a professional slide maker. Each illustration was photographed in color on 35mm Eastman keystock. The slides were fiber-board mounted in a fiber box which served as a self-mailer.

Each slide set was accompanied by a set of printed detail cards collated and indexed in numerical order. The recip-

continued on page 43

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. . . and full 42-inch width . . .

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Streamliner 200

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IN-PLANT PRINTING DEPARTMENT

In this article, second of a series, Bekir E. Arpag, Rochester Institute of Technology, discusses the development of photomechanical plates and current applications to help photographers set up a working in-plant printing department.

THE DEVELOPMENT OF PHOTOMECHANICAL PLATES

Fox Talbot in 1852 is said to have been the first to make photomechanical plates by using bichromated colloids. These plates were made for the intaglio process. Three years later, Louis Poitevin invented the "photolithographic transfer process" from which the photogelatin printing process was developed later on. Many experimenters finally helped to bring about the photomechanical lithographic plate process as it still is widely used today.

The earliest photomechanical litho plate was the albumin plate, so called because the organic colloid used for the light-sensitive coating was a water solution of egg albumin. When a bichromate salt is dissolved in water and added to the albumin solution, a zinc plate, for example, can be coated with it. The dried coating will be sensitive to light and is exposed to a negative film specially manufactured to yield extremely high contrast. The light-struck bichromated coating will be insoluble in water; this is the basis of the process.

Right after the exposure to strong white light (usually a white flame arc lamp) a black liquid developing ink is spread thinly over the entire plate and dried. The zinc plate is then developed under water which removes the unexposed non-image coating, leaving the insoluble image areas and the greasy ink film intact. A positive black image on the gray zinc is the result. A grease-receptive printable image is thus formed photomechanically.

Today casein is used more often in substitute for albumin. These plates are now called *surface* plates to differentiate them from deep-etch plates and to indicate that albumin is not the only colloid in use.

Several steps are incorporated at various stages of the above-mentioned procedure to improve upon the printing as well as the non-printing areas of the plate. The most important of these steps is "gumming," which makes the non-printing portions of the plate more water-receptive. It was found that when a small amount of a weak acid such as phosphoric acid is added to the gum its adsorption is increased. This operation is called desensitizing the plate (to grease). The image being greasy should repel the watery desensitizing gum solution and remain grease receptive.

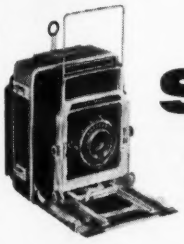
Deep Etch Process

The desire for a longer running and more dependable plate brought about the development of the

continued on page 34

Type of Plate (Offset)	Manufacturer	Approximate Run	Type of Work Best Suited For
NON-PHOTOMECHANICAL			
Paper plates to type on	Remington Rand Multigraph-Addressograph	Very Short to Short	Typewritten letters to be reproduced same size.
Printed (Relief)	D. I. Offset Corp., an affiliate of Standard Rate & Data Service Inc	Medium to Long	Example: To print directories
Printed (Offset) Paper duplicator plates	Same plate manufacturer as for plates which can be typed on.	Very Short to Short	Office forms, etc.
Printed (Silk Screen)	Grained Zinc and Aluminum plates such as used for surface and deep-etch plates.	Medium	Example: Poster work requiring several duplicate litho-plates.
Hand drawn Zinc plates	Usually companies producing posters.	Medium	Example: For some poster work

Above is a list of non-photomechanical plates, manufacturer, approximate run and the type of work best suited for the plate. A list of photomechanical plates mentioned in Mr. Arpag's article appears on page 34.



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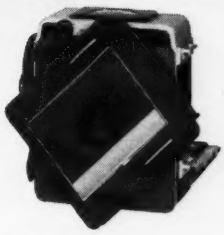
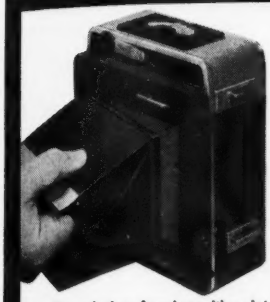
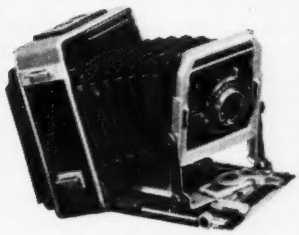


Revolving Back for horizontal and vertical pictures



Ground glass focusing with quiet operating, detachable focusing hood

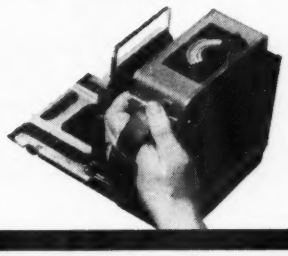
Improved coupled rangefinder matches any lens



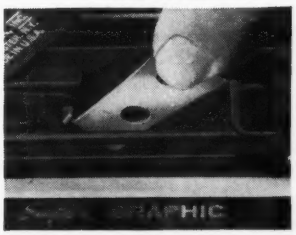
Adjustable front standard may be moved up, down, right, left and at an angle to your subject

Dial footage scale combined with automatic flash exposure indicator located on camera top for utmost convenience and ease

Built-in B-C power supply trips shutter and operates with any type of synchronized flash. Provides left hand tripping



Large, easy-to-handle cams match coupled rangefinder to any wide angle, normal or telephoto lens



Designed to make critical photography **Easier**

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Circle No. 535 on Post Card

continued from page 32

deep-etch process which became popular in the late 1930's. Although the printable image is somewhat recessed for greater wear on the press this plate remains a lithographic plate since it has to depend on the dampening of its non-printing areas.

The idea with deep-etch plates is to form a photomechanical acid resist in the non-printing areas while the printing areas can be etched. Again, a bichromated colloid is widely employed for the light-sensitive coating. However, the gum used as the colloid does not become entirely insoluble in water upon exposure. This is desirable, since the acid-resisting stencil will have to be removed before the plate is printable, and water is an inexpensive solvent. A positive film is used here in order that the stencil be formed in the non-printing portions.

After exposure to strong white light the coating in the unaffected image areas is dissolved with a watery solution saturated with calcium chloride and the image is etched. A lacquer solution and ink layer are applied over the entire plate and the stencil is removed with warm water and a scrub brush. The result is a slightly recessed positive image composed of lacquer and ink being grease receptive for lithographic printing. Again many additional steps are necessary to improve upon the two areas of image and non-image.

Bi-metal Plates

A more recent development is the bi-metal or multimetallic plate. These plates are capable of much longer runs than deep-etch plates, and, furthermore, their printing quality considered better. Two metals are electroplated to each other. One metal is naturally inclined to be ink receptive, whereas the other metal prefers water. Copper is almost universally accepted as the grease-receptive image metal, and chromium, aluminum and stainless steel are usually selected for their water-receptive characteristics. Most of these plates are prepared by a method very much resembling the deep-etch process.

Bi-chromated Gum

If the copper layer is on top of a water-receptive metal, it is coated with a deep-etch type bichromated gum, exposed to a negative and developed by removing the light sensitive layer in the non-printing areas. The copper is then etched away in the non-printing areas while the exposed gum coating protects the image. When the water-receptive metal shows through, the stencil can be removed with hot water and a

continued on page 41

Type of Plate (Offset)	Manufacturer	Film Used	Approximate Run	Type of Work Best Suited For
PHOTOMECHANICAL Surface	Finished (processed) plate available from most trade platemaking houses Chemicals available from companies such as: Harris-Seybold Co. Litho Chemical & Supply Harold Pitman Sinclair & Valentine R B. & P Chemical Co	Negative	Short to Medium	Example: Letterheads, office forms, insert ads, direct mail ads, small edition booklets
Deep-etch	Same as above	Positive	Medium to Long	Example: Same as above and some label work, magazine covers, some maps.
Bi-metal: "Aller"	Chemicals and unprocessed plates: Fred'k H. Levey Co	Negative or Positive	Very Long	Example: Labels, widely used by metal decorators.
Bi-metal: "Lithengrave"	Chemicals and unprocessed plates: Printing Developments Inc.	Negative	Very Long	Example: Labels, insert ads, etc.
Tri-metal: "Lithure"	Same as above	Positive	Very Long	Example: Labels, insert ads, etc
Presensitized "Alum-o-lith"	Lithoplate Inc., Subsidiary of Harris Seybold Co	Negative	Short to Medium	Office forms, letterheads, brochures, 3-color printing.
Presensitized "Enco"	Azoplate Corporation	Negative and Positive	Short to Medium	Office forms, letterheads, brochures, 3-color printing.
Presensitized "3-M"	Minnesota Mining & Mfg. Co.	Negative	Short to Medium	Office forms, letterheads, brochures, 3-color printing.
Presensitized Ozalid	Ozalid Div., General Aniline	Positive	Short	Office forms, letterheads, brochures, 3-color printing.
Presensitized Remington Rand	Remington Rand	Negative	Short to Medium	Office forms, graphs, charts, etc
Presensitized	S. D Warren Paper Co	Negative	Short	Office forms, graphs, charts, etc.
Relief or Dry offset	Any photoengraver familiar with the requirements of dry offset.	Negative	Extremely Long	To run ink or paper which would be affected by the moisture of a litho plate. Example: Special ink for check backgrounds

Comprehensive list of photomechanical plates

Cronaflex is durable:

TRADEMARK

Same intermediate makes hundreds of exact copies

Here's proof of the amazing durability of Du Pont CRONAFLEX Engineering Reproduction Film. The direct positive in the picture has reproduced over a hundred sharp, black-line reproductions. It's good for hundreds more. Examine that "second original." It's as smooth and kink-free as it was when first made. Can your present material pass a test like this?

CRONAFLEX shrugs off kinks and wrinkles, no matter how many times it's passed through direct process machines or conventional contact printing equipment. Your CRONAFLEX intermediates can be stored indefinitely without tearing or becoming brittle.

And here's good news for your engineering department: CRONAFLEX is matted on both sides. Smudge-free lines can be drawn and erased *on either side of the film.*

CRONAFLEX Films are available in three types: (1) Direct Positive Film, (2) Contact Film and (3) Projection Film. For more information on this revolutionary new line, ask your Du Pont Technical Representative, or write: E. I. du Pont de Nemours & Co. (Inc.), Photo Products Department, Wilmington 98, Delaware. In Canada: Du Pont Company of Canada (1956) Limited, Toronto.

This advertisement was prepared exclusively by Phototypography

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Aluminum sheets are thoroughly cleaned prior to being sprayed.

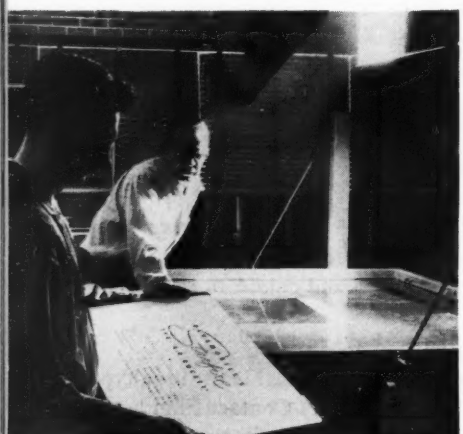
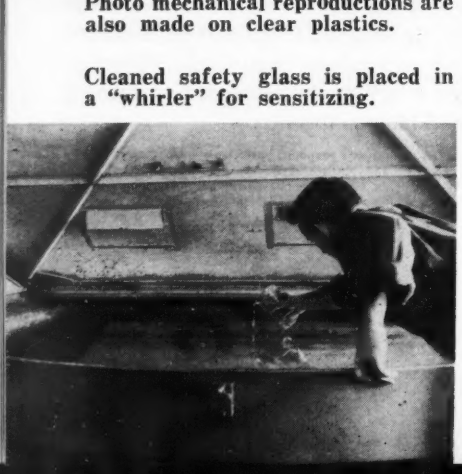


Photo mechanical reproductions are also made on clear plastics.

Cleaned safety glass is placed in a "whirler" for sensitizing.



GM Photo Dept. Simplifies Reproductions on Metal

by FRANK SMITH
GM Photographic

Within GM Photographic's building at the corporation's Engineering Center, the Metal Drafting Reproductions Department produces from master drawings photographic reproductions on metal which are characterized by exceptional dimensional stability. These exacting reproductions are of remarkable value to many GM divisions in easing a multitude of planning and production problems.

Reproductions are of two types: same-size and expanded views. The latter are enlarged to accommodate the amount of shrinkage ultimately encountered in the specific material used for dies and castings. The use of these photographically-produced shrink reproductions thus speeds up the making of patterns for dies and castings, compared to tedious hand-drawing to allow for shrinkage.

Same-size reproductions are made in sizes up to six feet by 20 feet; many from drawings on metal. Master layout panels are furnished by the Department for the use of design draftsmen in preparing such drawings on metal.

An aluminum sheet that will become a metal layout panel or metal draft reproduction is thoroughly cleaned, degreased and scarfed. The sheet is then put on an automatically timed rack to make several passes through a spray booth, where it is evenly sprayed with a white coating. The booth was custom built for GM Photographic to insure the utmost uniformity in paint application. It features automatic controls for paint thickness and an automatic delay between coatings. The sheet is then placed in a special sink, where it is mechanically sanded to achieve the proper drawing surface.

The first step in producing the reproduction involves making a reflex negative on a sheet of plate glass. Creation of the negative begins with the glass being sensitized on one side. The sensitized safety glass then is placed in contact with the customer's drawing on a vacuum frame. A special mechanical registration procedure developed by GM Photographic is used when it is necessary to make several sections to complete a reproduction in this negative-making operation and in printing reproductions on metal. Air is automatically evacuated and the frame is exposed to a light source to produce a same-size reflex negative that will later make a metal draft reproduction when exposed to light in vacuum frame contact with a sheet of sensitized metal.

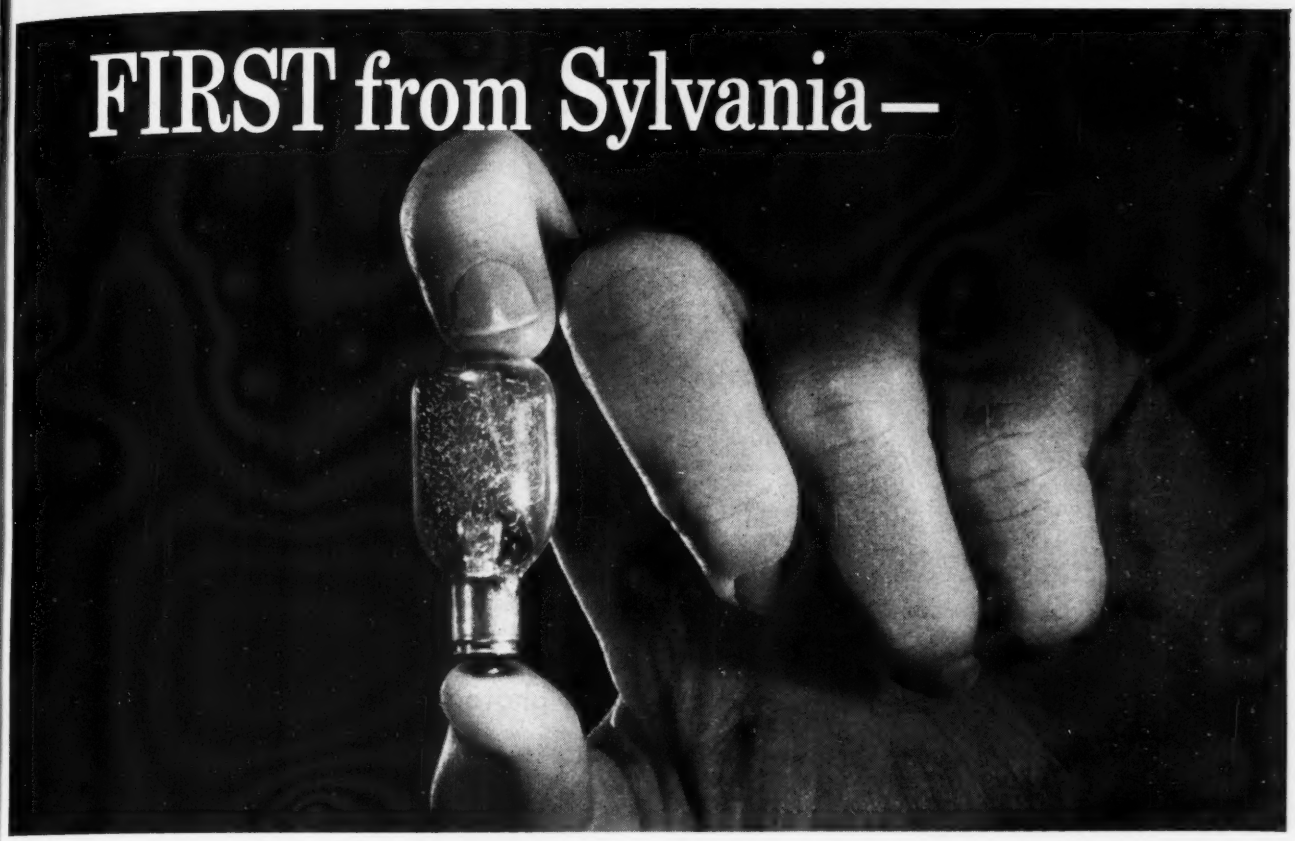
Negative Opaqued

Removed from the vacuum printing frame, the glass negative is processed, then touched up by opaquing to improve the appearance of the printed metal draft reproduction. After opaquing, it is ready for printing.

Another sheet of aluminum now enters the process. This sheet has a thin coat of white paint, over which is sprayed a sensitizer. The glass negative is put on top of the sheet of aluminum again in face contact. Vacuum is applied and the sandwich is exposed to an arc light for the required printing time.

After processing, the result is a piece of aluminum with fine black lines on a white painted background—an accurate photographic reproduction. □

FIRST from Sylvania—



Zirconium-filled flashbulbs!

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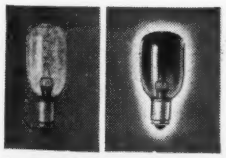
Sylvania revolutionized the flashbulb world when it harnessed the fantastic light-producing power of Zirconium and built it into the M-25 . . . the tiny flashbulb that delivers the picture-taking light of a bulb 4 times as large!

Equally remarkable is its companion, the M-5—the new Zirconium-filled flashbulb that, for the first time, provides photographers with practical flashbulb performance in a miniature size bulb.

The M-5 now puts the flashbulb field on an equal footing with the new improved films . . . answering the need for a flash-and-film team that enables professional photographers to enjoy small-bulb convenience.

Order Sylvania Zirconium-filled flashbulbs from your supplier today.



Now for the first time a miniature flashbulb for professional use

Perfect flash-peak timing—The M-5 peaks at 20 m.s. for high-speed synchronization. (M-25—15 m.s.)

Absolutely color-corrected light. The M-5B is *fully color-corrected.* Ideal for use with Daylight color film indoors.

Greater photo depth than ever before—Because of the power of the M-5, cameras can be closed down one full stop from comparable-sized bulbs, thus obtaining greater depth and clarity.

—Plus the other famous Sylvania features

Blue Dot . . . Exclusive filament supporting glass stem . . . and quick-break filament.

SPECIFICATIONS

	M-5 & M-25	M-5B & M-25B
Approx. Total Light Output (Lumen Seconds)	16,000	8,500
Approx. Time to Peak (Milli-seconds)	20 (M-5) 15 (M-25)	20 (M-5B) 15 (M-25B)
Approx. Duration at ½ Peak (Milli-seconds)	13	13
Approx. Peak Lumens	1,200,000	600,000
Voltage Range for Operation	3-45	3-45
Approx. Color Temperature	3800°K	6000°K

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Circle No. 572 on Post Card

Aerial War Against Cereal Crop Disease

Cereal crop diseases are detected via aerial photography from 10,000 feet up; film and filter combinations accentuate differences in sick and healthy plants.

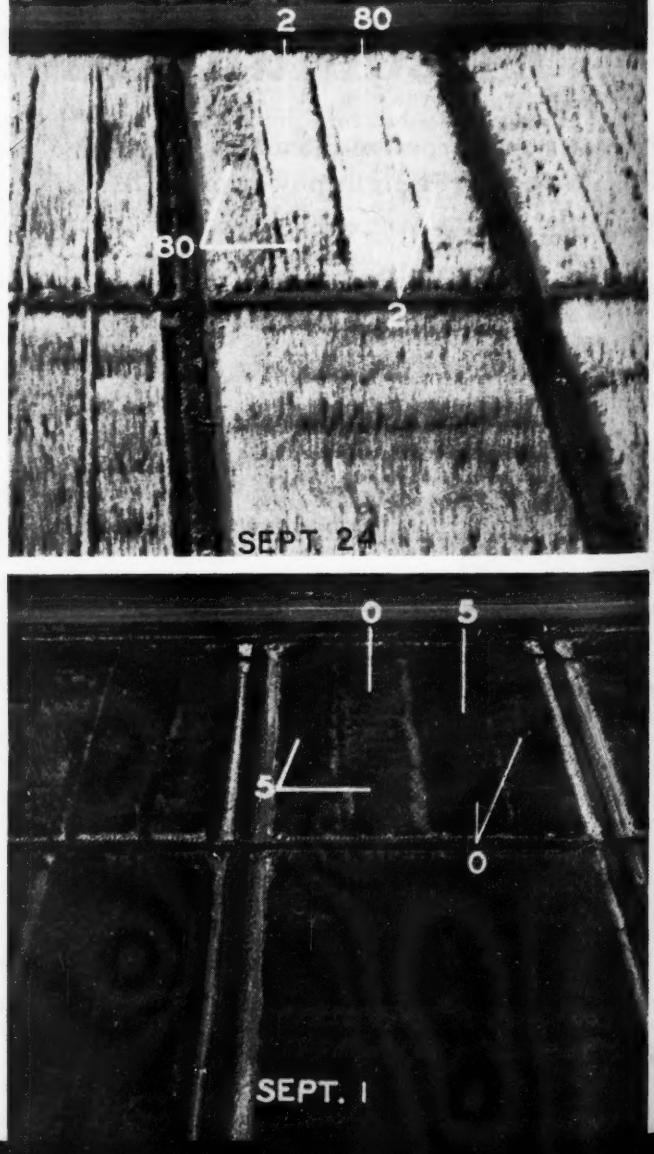
by ROBERT M. AUSTIN

Cereal crops form the overwhelming bulk of the world's food energy sources. Detection and identification of cereal crop diseases has long been a major stumbling block for agriculturalists seeking improved disease controls; today the application of aerial photography is helping to clear the way.

Research by Dr. Robert N. Colwell, under the auspices of the National Research Council's Committee on Plant and Crop Ecology, has proven it is possible to detect certain crop diseases via aerial photography at altitudes up to 10,000 feet. Remarkable is the fact that many of the infected areas detected this way were not visible to a trained observer ten feet from the diseased plant.

As outlined by Dr. Colwell, this is the procedure in examining a specified area for crop disease: First, a healthy sample of the cereal crop to be photographed is placed in a spectrophotometer in order to determine the reflectance of light from the plant to the aerial camera within each part of the visible and near-infrared

Crop rot as seen at two different stages of development.



spectrum. These reflectance measurements are made for that part of the plant which will be the most evident in the type of aerial photograph planned. For high altitude aerials this is normally the upper leaves of the plant under study as they are the most visible. Similar measurements are then also made on a diseased sample of the same cereal crop.

Select Film and Filter

The next step is to select a film and filter combination that will accentuate the difference in light reflectance between healthy and diseased plants. To accomplish this, it is necessary to choose a combination that will permit photographing only with light from that part of the spectrum in which the healthy and diseased plants differ greatly in light reflectances. The variation in tone or color on aerial photos taken with such a film-filter combination indicates whether or not a sample is diseased and, if so, the extent and severity.

In determining the method of matching film and filters, the following factors must be considered: (1) spectral reflectance of the crop (2) spectral sensitivity of the film (3) spectral scattering by atmospheric haze, and (4) spectral transmission by the photographic filter.

Four Films Used

Films used in the study were Super XX Aero Panchromatic, Infrared Aero, Ektachrome Aero (high contrast) and Camouflage Detection. Of the hundreds of filters which might be used with black and white film, Dr. Colwell has determined that the Wratten 25A and 89A filters used in conjunction with panchromatic and infrared films, respectively, were sufficient for the majority of distinctions to be made of crop diseases on aerial photos. For color film, haze and color correction filters are used.

This procedure is based on the principle that certain wave lengths of light are absorbed by a leaf's surface, while others are reflected by the chloroplasts and the spongy meso-

continued on next page

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ASCOR, pioneer and leader in Speedlight research and development, has made 1958 a banner year for you with these exciting new products, designed to improve professional lighting techniques and to extend the versatility of existing Ascorlight equipment. This bigger-than-ever line of precision Ascorlight equipment will mean increased operating efficiency and bigger-than-ever profits for you.

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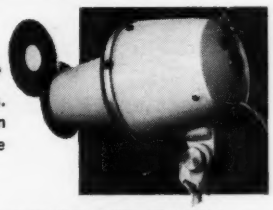

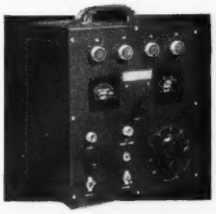

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B412 — 400 watt-second capacity portable unit with individual modeling lamp switches and 3 isolated light outlets (2-1-1 ratio). B413 — 300 watt-second capacity compact unit designed for production portraiture. Has 4 light outlets so that a main light, fill light, hairlight and backlight may be used (2-2-1-1 ratio). B420 — a single light outlet, AC operated, 200 watt-second capacity unit especially desirable for school portraiture work.

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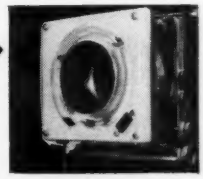
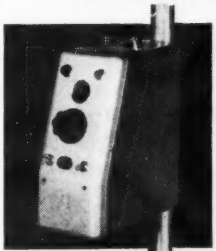
Designed for the photographer who requires a soft, even, shadowless light. These circular lights slip over the larger size lens mount and may be adapted to a variety of lenses by means of step-up and step-down adapter rings. Available in Ascorlight Series 200, 400 and 600.



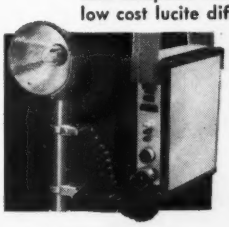


NEW ASCOR STUDIO POWER SUPPLIES

The B502, a streamlined version of the Series 500 line, has a 100 watt-second capacity with half power switch. The B503 with a 200 watt-second capacity has full, half and quarter power controls and may be attached to a light stand at waist level by means of a quick release type bracket.

NEW ASCOR L529 16" LIGHT UNIT

A counter-balanced flat, soft portrait type light which is lightweight and compact. Features a 16" reflector, rotating barn doors and new low cost lucite diffusers. For Series 400 and 500 Ascorlights.



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AERIAL WAR

continued from page 39

phyll tissue in the healthy state. Should the leaf become diseased, the spongy mesophyll tissue loses its infrared reflectivity long before the leaf's green color begins to fade, thereby making the disease much more evident on infrared than panchromatic film. Since there is very little atmospheric haze disturbance in the infrared, the diseased areas can be detected from very high altitudes in infrared photography.

Low Level Photographs

Subsequent to the high altitude aerials on which vast areas of crop land are covered quickly and economically, the next step is to make low level photographs of only the infected areas in order to determine the exact type of the disease, its severity and to estimate the reduction in crop yield.

The best means of accomplishing this task, Dr. Colwell found, was to utilize low-level stereoscopic photographs, either oblique or vertical. A helicopter is highly satisfactory for this since its maneuverability enables the photographer to obtain any position with regard to the test area being photographed. A Sonne continuous stereo strip camera and a K-17 aerial camera are used in both the high and low altitude work. However, the K-17 requires slight modification for use in the helicopter during low-level work.

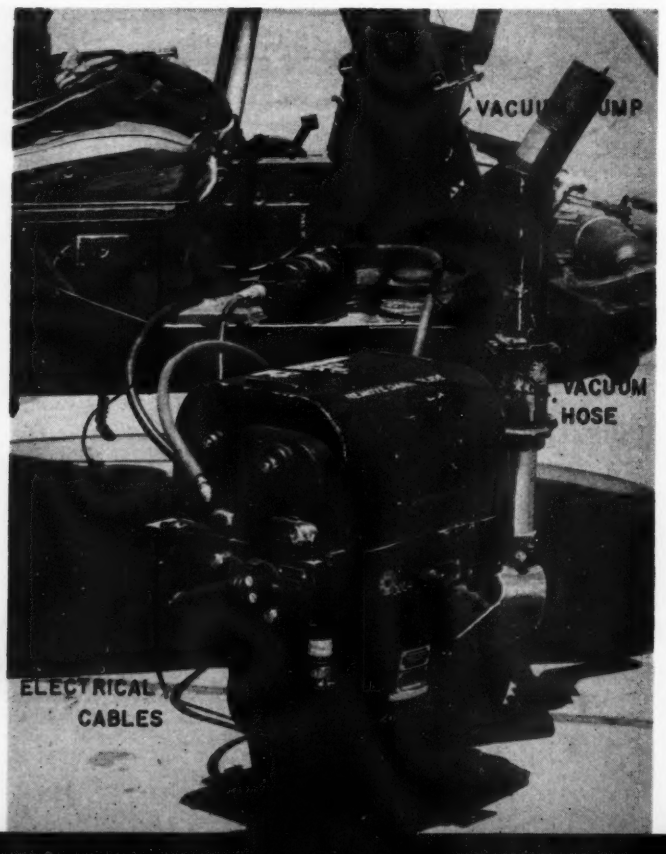
Photo Interpretation

Photo interpretation of the infrared aerials show infection centers as dark colored areas even at very early stages in development of the diseases. In the color photographs, taken at later dates, diseases are detected by their coloration. On panchromatic photos some, but not all, of the diseases are detectable because of their lighter tones.

Dr. Colwell's study also indicated that this procedure can be used in distinguishing soil and mineral types, plant species, water depths and "high risk" timber stands, where attacks by insects or disease are liable to reach epidemic proportions.

By setting up a systematic procedure, Dr. Colwell concludes, it is possible for even the layman to do photo interpretation in the detection of cereal crop diseases. □

Seen is the K-17 camera installation used. A special feature is the vacuum pump used to keep film perfectly flat.



35MM PROJECT

continued from page 25

presented a slide changing problem. Since we did not want to go to the expense of a strip film at that stage, the problem was one of finding a fast, foolproof way of projecting 260 slides without a hitch.

It was complicated by the fact that half of the audio presentation was on tape. Once the tape was started, any foul-up in projection would necessitate shutting down both machines, thereby spoiling both the concentration and mood of company officials watching the show.

We first tried a projector in which the slides are stacked in a vertical magazine on top of the machine. By using an extra long magazine, it's possible to load about 150 slides at one time. Equipped with a push-button remote control, this machine held considerable promise. Unfortunately, it jammed or skipped just often enough to rule it out as unreliable. If that wasn't enough, slide loading was so critical that spilled slides were always an imminent possibility.

We finally settled on a Model 724-G Bell & Howell slide projector equipped with an Airequipt changer. Each Airequipt magazine holds 36 slides in individual metal jackets. As each exposed slide is withdrawn through the operating arm, the magazine moves forward one position in the chute. Through trial and error we discovered a fresh magazine could be placed in the magazine chute when the in-use magazine was almost exhausted. After the last slide in the in-use magazine was exposed and withdrawn (and this took alertness on the part of the operator), a slight nudge—which could be determined exactly by a two-click sound — placed the fresh magazine in "firing" position in a fraction of a second. This system worked perfectly through all eight magazines.

For slide signaling we bought a low-priced electronic tone signal operated by a telegraph key and recorded the signals right on the tape. When live narration was taking place, the speaker used a "cricket" signal purchased in the local dime store. □

IN-PLANT

continued from page 34

scrub brush. The copper image will readily accept ink on the press, while the other metal will prefer water.

If the water-receptive metal is electroplated on top of the copper, the same light-sensitive type of coating is used, but exposure is through a positive film. This light hardens the non-image areas after which the coating in the image is dissolved as is done with deep-etch plates. A special etch then removes the water-receptive metal in the image down to the copper, while the gum stencil protects the non-printing areas from being etched.

These plates are strictly lithographic plates on which both printing and non-printing areas are practically in the same plane. The metal layer on top is in the order of a few ten-thousands of an inch thick at the most.

Perhaps the most amazing plate in all the graphic arts is the lithographic pre-sensitized plate, which takes only a few minutes to produce. As their name implies these plates are pre-sensitized to light by the manufacturer. This is possible because of the diazo-type sensitizer which is much more stable under varying atmospheric conditions. Usually these coatings are applied to smooth-surfaced aluminum plates. Some are manufactured for positive exposure; most of them, however, require a negative film such as used for producing surface plates. Their print quality is excellent, and durability is constantly being improved.

Presensitized negative exposure plates are first exposed through a negative. The exposure time compared to previously discussed plates is about half or one-third as much. After exposure a special solution also made by the manufacturer of these plates is applied to the surface. This removes the unaffected diazo sensitizer, leaving the insolubilized coating (in the image areas) which is quite grease receptive. It readily accepts a special, colored lacquer solution, which strengthens the printing area and develops the latent image. The first solution is reapplied and dried to a thin even film, and the plate is printable.

With pre-sensitized plates exposed to positives, the light struck special diazo coating is decomposed; a developing solution then removes the decomposed sensitizer, leaving the grease-receptive coating in the image areas. □

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continued from page 10

After exhaustive tests, developer mixed up in the main photo lab was used in both locations with good results. Why? What had happened? A little reasoning showed that although the chemicals used were identical when the bad processing had occurred, the water used to dissolve them had been drawn from different reservoirs. Qualitative analysis showed that the branch laboratory water had faint traces of metallic salts, which were affecting the delicate balance of the developing solutions.

A gremlin that hangs around is much easier to track down than one of those transient phenomenon that occurs every so often, because no one knows when it will put in an appearance much less why. Louis Schwartz, a top notch industrial photographer in Charleston, S.C., was confronted with such a baffler. Sometimes black and white prints became stained and discolored in processing. The usual routing was gone through of checking the strength and freshness of the developer, the strength of the hypo and washing time. The problem baffled the experts, and in a desperate attempt to overcome this gremlin, several brands and kinds of paper were used. Still the stains showed up every so often. But not every day.

Fruitless Study

A fruitless study was made to see whether or not fixers should be changed. Finally, a test was made to determine whether washing time was sufficient. At this point the first clue turned up: when prints were washed a long time, they seemed all right, but when they were washed and soaked in water overnight (a common practice for the last run of the day), they were more stained than ever.

The first suspicion was of fungus or mold which sometimes appears in humid and damp climates. But there was no fungus.

At this point someone suggested running an analysis of the stain. After some series of tests, it was discovered that the stains were caused by slight traces of copper. Copper? In a stainless steel tank? Some astute detective work, and basic engineering and physics soon unraveled the mystery. The stainless steel tank was hooked up to a copper plumbing system. There was a slight amount of leakage of electricity to the ground, a galvanic system was set up and the silver in the prints was being, in effect, electroplated with copper! Detective work of the first water!

Classic Mystery

One of the classic mysteries that I remember concerned a young photographer who had shot many rolls of color film in a Rolleiflex. Every so often there were several frames that had an overall green cast. The cast did not extend over the frame line, it did not appear with any regularity on the end or middle frames, but appeared almost at random as a single green frame, here a two or three frame discoloration, but in each case in a different place.

The camera was checked thoroughly. Processing and film were checked, but nothing could be discovered. Meanwhile, the photographer was editing the many rolls he had shot and trying to puzzle out the reason for the strange discoloration. Fortunately, he showed the films to a good many photo detectives. One of them was astute enough to look at some frames that were NOT discolored. One or two of them contained pictures of the photographer made of him by one of his models during a lull between pictures. The photographer was wearing a sport cap with a long bill made of a transparent green plastic. Of course, you've guessed it by now: when the photographer shot at waist-level or eye-level using a sports-finder, things were fine. But when, in using the twin-lens reflex camera, he bent his head down to use the magnifying glass in the hood, the bill of his cap very neatly served as a filter.

This last piece of detective work was of particular interest to me because shortly afterward I had a client come to me with almost an identical problem. His roll film rolls were yellow instead of green and, as in the previous affair, discoloration did not occur with any regularity. Calling on past experience, I promptly asked about a yellow visored cap or some such filtering device. No, this man had worked bareheaded. But then the answer came out. He was NOT using a twin-lens reflex camera but a Speed Graphic with a 2¼ x 2¼" roll film adapter. This was during the period of a horrible gremlin which color technicians and detectives called "Wild Yellow." This was a peculiar phenomenon which was a real baffler until it was discovered that certain film holders (mostly sheet film) had dark slides which, instead of being made of hard rubber, were made of a plastic containing a mildly radioactive substance. When exposed to strong sunlight or close to a powerful electronic flash unit, such a slide became sensitized, so that when re-inserted into the holder with the exposed side facing the emulsion of the film, it affected the blue-layer and caused an overall yellow cast. As soon as offending slides were replaced with ones that were not activated by the ultra-violet of the light, the problem was solved.

Another Mystery

My friend with the roll film back had just made the mystery a little more complex: he pulled his slide and would shoot anywhere from one to a whole roll of pictures without replacing his slide. Then, he might replace the slide after each exposure and the "Wild Yellow" affected only those frames of film within the film frame at that time. A change of slide material set him straight, too.

These problems are somewhat amusing when you know the solutions, which is why I said that these detective stories would make good reading for a technically minded photographer. □

HIGH SPEED

continued from page 23

Although high-speed motion photography can be used to measure all the physical quantities encountered in shock and vibration, it particularly excels other methods in its ability to measure displacements. This is important since displacement data are frequently more valuable and informative than acceleration data. It is displacement which determines how much mechanical parts are stressed and how they function.

Bob Hawkins, an avid apostle of high-speed motion photography, says that at Sperry data recorded by the high-speed camera has paved the way for the design of relatively fault-free equipment. □

NEMATODES

continued from page 30

ient of a slide kit extracts the slides and cards pertinent to his audience only—i.e. omit slides on cotton in north, etc.

The original print order was for 25 kits. An announcement on the availability of the kits was made in Shell's newsletter which is sent to all agricultural county agents and experimental station research personnel. So successful have the kits been that demands for it have resulted in orders for 176 more kits. □

SPLIT FRAME

continued from page 21

agement saw the old way and the new on the screen at the same time. In a 60-second sequence, viewers saw one operator finish the work in 35 seconds while the other man was "still struggling" at the end of a minute.

After seeing that the man who worked the new way had nothing to do for 25 seconds, management was sold. □

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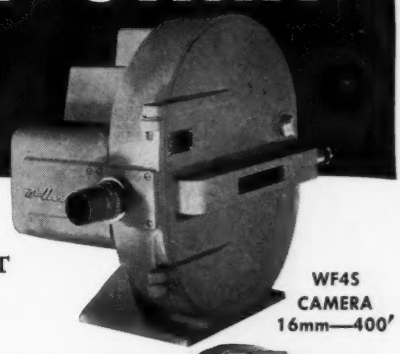

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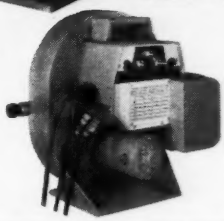

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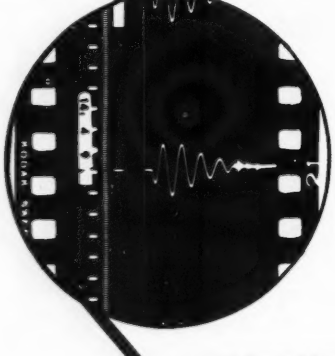

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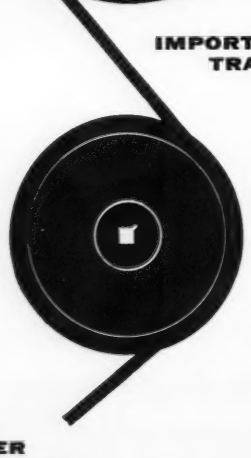

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High speed photographic studies of bullets in flight can now be made without a camera! Professor Harold E. Edgerton, Massachusetts Institute of Technology, has turned this neat trick in his laboratory with simple techniques, rudimentary equipment and the aid of a special double-flash light source.

A .220 calibre Swift rifle was mounted firmly on a waist-high stand and aimed at the center of a six-inch iron pipe at the opposite side of the room. The pipe, mounted horizontally, was approximately five feet in length and filled with sand.

Approximately midway between the rifle and its target was a table on which was set a standard 8x10 cut film holder. This holder was arranged so that the line of fire would pass 10½" in front of it. A double flash light source (Edgerton, Germeshausen & Grier Type 2307) was placed 44½" from the film, directly facing it and leaving a space of 34" from the light source to the line of fire. The film was Panatomic X and was protected by the film holder until the room was darkened, the experiment was ready to proceed, and the slide was pulled.

The light source was triggered by a microphone placed under the gun barrel which reacted to the shock wave set up by the blast. It is also possible to trigger the light source by means of a photo cell or a manual switch. Trial and error determined the time interval between flashes to coincide with the passage of the bullet across the face of the exposed film.

A six-inch ruler was placed directly beneath the path of the bullet and provided a ready means of measuring the distance traveled by the bullet in the interval between the two exposures.

The average velocities of the bullets are determined by computing the ratio of the distance traversed between the two exposures to the known time interval between the two exposures.

A camera may be used rather than the simple arrangement described by mounting a fresnel lens in the end of the double-flash light source unit. The fresnel lens permits the point light source to be focused sharply as an image on the lens of the camera which may be a conventional press type, view camera or any suitable small camera. For studies of explosions, expendable sheets of shatterproof glass may be placed between the equipment and the subject. □

Harold E. Edgerton is positioning a .220 calibre Swift rifle for correct alignment when photographing a bullet in flight without a camera.

CAMERA CONVERTED

continued from page 27

out a hole in a piece of discarded film which is then used as a template.

The second mirror, of the proper dimensions and thickness, fits snugly into the lens board receptacle when the lens board is removed. If a mirror of the exact thickness is not available, a thinner one can be used and shimmed up with scotch tape. All the silvering and backing except for a two inch square area in the center is removed. This square may be smaller if the lens board is small.

If a third mirror is used, it is attached to the copy easel. Its size is optional and it should lie perfectly flat on the same surface as the copy material when the camera is in use.

Squaring up the camera is done in the following manner: the camera is set up to make the exposure with the first mirror attached to the back in place of the ground-glass back, facing, or reflecting, into the camera. Next the lens board is removed and replaced with the second mirror which also must face into the camera.

With the lights turned on, the eye is placed just behind the camera as though prepared to focus except that it is quite close to the mirror. The line of sight is centered at the intersection of the lines on the first mirror (because of the small circle the intersection does not actually exist but its location is easily sensed) and the reflections of the lines noted on the second mirror.

Each succeeding reflection, both of the vertical and horizontal lines, is farther from the first reflection. By adjusting the swing-back of the camera, the multiple reflections can be centered behind the first reflection. With this accomplished, the camera is square—its back is perpendicular to the axial ray of the lens system if the lens is properly mounted.

In squaring the easel, which is the next step, the lensboard mirror is removed and the third mirror positioned on the easel.

continued on page 49

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Movie Clinic

by JOHN OXBERRY
President,
The Animation Equipment Corp.

SETTING UP AN IN-PLANT ANIMATION DEPT.

PART II

Neither the animator nor the cameraman needs to have counters on the table to know how many inches or portions of an inch he is moving north or south. It can be done with a simple pantograph and pointer system. The animator plots his move by moving the artwork along a line that the camera is to follow. He divides the line into the number of frames that he wishes to move.

For example, if he wants to move from a six field east to a six field west he might do it in a straight horizontal line of 10 moves; the middle point would be move number five. He makes a non-linear scale starting off with a close move marked at the first point. Camera moves get progressively wider until he gets to the middle point and then progressively smaller until he reaches the last move.

The cameraman's moves on the animation table are similar. For example, in shooting a hypothetical 48 frame zoom—going from a 12 field to a four field—he marks a scale with the middle frame (number 24) on a piece of scotch tape taped alongside and similarly marks the final frame. He moves the camera according to a predetermined plan given him by the animator on a detailed log sheet.

Slow and Whoosh Zooms

If a very slow zoom is desired, there might be 108 frames (moves) between the 12 field and the four field. For a *whoosh* zoom (one that starts off slowly and gets progressively faster like a golf ball coming at you), the initial markings would be very fine lines. Each move would get further and further apart until they are about an inch apart.

If you wanted to move in a given direction (N, S, E or W) at the same time, you would have to come down a calibration each shot and move the compound table. For example, to move south the table would have to be moved north. This would be done a frame at a time in this fashion: Set up the art work, check focus and alignment, put the glass platen down on the artwork and shoot the frame. The camera stand would then be cranked down to the next line, focus set, compound table moved north a little bit (according to the pantograph movement the animator has laid out), cel changed if animation instead of mere movement is involved, platen put down, and the frame shot.

Shoot on Single Cels

All camera movements have to be shot on ones (single cels). Shooting twos results in a staccato or strobe effect. For example, in a pan scene the pan starts slowly with small areas covered in the first move. The speed (area covered) increases, slows again and then stops. At that point, cels can be added and shooting commence on twos.

Here is a typical, simple scene. Let's say a character will walk across a lawn, behind a picket fence, take off his hat and smile.

On the background cel would be the lawn, perhaps a house and a few clouds. These could be artwork or cardboard cutouts. The character, himself, will be animated on cels. The picket fence will be pasted on the glass platen so that every time the platen is lifted the fence goes up with it. Being opaque, the character on the cels will be behind the fence.

Cel one would be the complete body with head and arms. Cel two would be the same thing but the next step and so on until he had walked into the middle of the picture. At that point his body will no longer be drawn

but will remain one cel. His head will be drawn on a separate cel to save the work of drawing the body over and over.

Introducing such a new cel layer would result in an exposure density drop. This is avoided by introducing a plain cel at the start of the scene and carrying it until the new cel is added. Any change in exposure during the scene is thus eliminated.

The little walking scene is an example of typical cel animation. There is another type of animation, slide motion, which can be done on standard equipment and which is particularly applicable to industrial films since it is both effective and inexpensive. It is called slide motion because it is an effect directly on 16mm film that simulates a 35mm filmstrip.

A title is held. It dissolves into another title, then perhaps into the product, the workings of a gear or anything similar. Such effects are put in via the dissolving shutter mentioned earlier. No lab effects fees are involved.

Another easy and effective effect is a wipe. It can be done right on the cel-platen area by wiping one scene off with a black card. Speed is controlled by using the peg crank. While the scene is completely blacked out, it is changed. The camera is backed up to the desired point, as in a dissolve, and wiped back on. The result is a clean wipe and it is all done on the animation stand.

Different Effects

Different effects can be accomplished by varying the shape of the black-out card. With a saw-edged cut on the card you can have wiggly-lines or it could be an animated wave coming in to change the scene. It could be an explosion or whatever the sequence calls for.

Putting the effects in on the animation stand saves considerable money when it is considered that dissolves, fades and wipes cost from $3.50 each and up. It also looks better when it is done in the first film generation.

There are many more time and money saving shortcuts the industrial animator can employ with his standard equipment.

continued on next page

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MOVIE CLINIC

continued from page 47

For example, a film employing slide motion can be made for 1/100 the cost of full cel animation and is often indistinguishable to the audience. In this type, the characters can be cut-out dolls with pin points in their legs and arms. They are slid in on the peg track instead of being animated. Shutter dissolves are used to simulate cel animation. A character takes off his hat and puts it in his hand in five or six frames dissolved into each other. The effect is a quick motion like a *whoosh*. A head turning from left to right may be done in a long dissolve and the appearance is that of animation.

Finally, here is the simplest type of animation yet quite effective. Photograph the product itself (or 8 x 10 glossies of it), and a slow zoom to give the feeling that something is happening, and add camera or table movements plus shutter effects. Combine these with hot press titles and you have a nicely animated film without any cel work.

When costs are measured against the results achieved, it is certainly practical for any sizeable industrial motion picture section to maintain an animation setup. Shortly, a complete animation package that can be set up in an afternoon will be available for 16mm users at $6,000. This includes the camera, stand, pantograph table, discs and punch.

Camera to Use Bi-Pack

In addition, a 16mm animation camera will also be available in the near future which uses bi-pack. This is a process whereby two films are in the camera—one a processed negative that requires titles and the other raw stock. By focusing on a white card with black lettering (the titles) the white area of the card becomes the printing light and the black is withheld. The result is clear white titles over the background and the camera has, in effect, become a step printer. This will result in tremendous savings. Optical printing runs $50-$100 an hour. With their own bi-pack camera, industrial animators will be able to cut it to about $5 an hour.

If a company has been spending $15,000 or more on animation work it would certainly pay to put in a one-man studio. It would pay for itself within a year and a half. A live action cameraman can easily adapt to the animation camera. Staff artists similarly pick up animation techniques very quickly.

Companies which have previously refrained from using animation, because of the fear of prohibitive costs, will find that their films have a professional quality that wins them a better reception and makes them far more effective. Today animation is within the reach of every industrial organization. □

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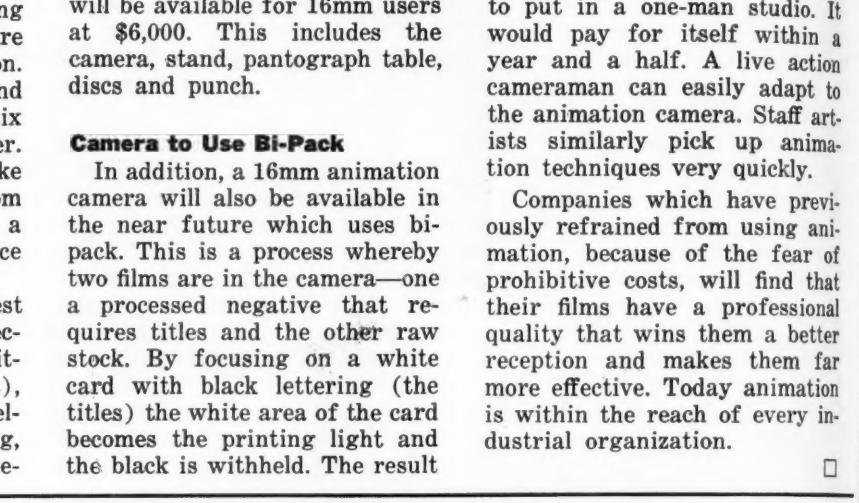

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CAMERA CONVERTED

continued from page 45

In this step the camera must be squared as a unit, it being already square with itself, or the easel must be squared with the camera. It is preferable for the easel to be squared as the camera, no matter how rigid, is nevertheless flexible enough to be thrown out of square by the slightest movement.

To be sure that the lens is square with the lens board, it must be determined that it is attached to the board in such a manner that each screw exerts approximately the same pressure on the flange.

The lens may be used at a fairly large aperture if the camera is squared accurately and the copy is held flat behind glass or on a vacuum frame. Usually this is important only in the case of slow films such as Kodalith and Reprolith. In any case apertures of larger than *f*/16 are not recommended, and for most work *f*/22 and *f*/32 are preferable. At apertures smaller than *f*/32, a loss of definition occurs with certain lenses.

For accurate work the camera should be squared before each use if any part of it has been changed since the previous exposure. Need for this precaution can be proved by squaring up the camera with the first two mirrors and racking the box forward or backward.

There are other valuable applications of this method such as the squaring of enlargers, checking reflex cameras for effective parallelism of mirror, groundglass and back, checking reproduction equipment and other things. For example, the mirror leverage principle is used in the measuring of torsion in stressed beams.

Any vibration in the studio can be detected by observing the mirrors in the camera.

The same principle is involved in squaring up an enlarger but the procedure must be adapted to the particular enlarger in question. The lamp housing is removed and the negative carrier used to support the first mirror. Usually shims or other holding devices are resorted to for holding the enlarger in squared position as few of them have swing adjustments. Since it is not practical to square an enlarger for each print to be made, it is best to strike an average of accuracy for various positions on the column.

To illustrate the accuracy of this method with an 8x10 camera, suppose it is out one degree (a barely discernible amount) on the 10″ dimension. If the center is accurately focused, one side of the camera will be out of focus about 1/11″ toward the lens and the other side the same amount away from the lens. If the lines of the first mirror are 1/100″ and the mirrors are about 15″ apart, then the maximum probable error is of the order of 7 to 10 sec. angular turn. By comparison with accuracy found in high priced reproduction equipment, this provides a safety factor of about 60.

It takes about five or ten minutes to square a camera by this optical method. □

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SIPLEY

continued from page 29

other patent involving multiple photography, gives the *raison d'etre* for this camera and may be quoted directly: "Many firms including grocery stores, department stores, and others receive and cash many personal checks for individuals and customers during the course of a year. Occasionally a bad check is received and by the time that this fact is discovered, it is often impossible to locate the individual who passed the check because of lack of identification. Losses resulting from transactions of this nature can and sometimes do amount to an appreciable sum during the course of a year's operation. It has been suggested, therefore, to provide a photographic apparatus which can simultaneously photograph a person, the check being passed by the person and the identification offered by the person."

In this camera only one lens is used in conjunction with a fixed mirror and an adjustable mirror to record the check, identification material and the face of the individual. The simplicity of the machine is evident in Figure 1. The adjustable mirror (35) is necessary to properly center the head of the individual irrespective of his height, while the mirror (39) in a fixed position reflects the check and identification from the platform at (37) and which is illuminated by the built-in light at (46).

Figure 1

U. S. Patent 2,827,832: Roger W. Patterson and Wade S. Nivision, New York, N. Y., assignors to Eastman Kodak Company, Rochester, N. Y.

APPARATUS FOR PRODUCING A STEREOSCOPIC PHOTOGRAPH FROM SEISMIC DATA

In one of the four claims made by the inventor is to be found a suggestion of considerable interest to the engineering and executive departments of many industries to which the graphic presentation of facts is of major importance. The first claim or object of the invention as stated "is to provide an apparatus which lends itself to the making of a photographic representation of seismic data in such form as to have three-dimensional characteristics when viewed through a stereoscopic viewer." Also the apparatus can be used by geologists in making 3-D photographs to show cubic sections of earth strata characteristics, fault lines, underground caverns, salt domes, oil pools, etc. The fourth object is to provide engineers,

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architects and others with a machine with which they can make a three-dimensional photograph from any structural form drawn on a chart, map or other sheet.

The machine is built with an upright closed housing. A stereoscopic camera is so placed that the lenses face into the interior of the housing, this being painted on the inside with a non-reflecting substance. In front of the machine is an apron or chart platform on which the graphs to be photographed are placed. A movable stylus or pointer, which may be used to follow any line or curve on a given chart, is mechanically connected to a post which rises through a light-tight cloth bottom in the machine and which carries on its top a pinpoint light source. This post moves in a horizontal but not vertical plane as the stylus moves over the chart. Vertical motion is imparted to the support in the housing which carries the camera. It appears to be a instrument which will call for varied ingenuity on the part of the operator.

U. S. Patent 2,829,556: Douglas O. Carter, Purcell, Okla.

INTEGRATED MICROGRAPHIC CAMERA

This apparatus is designed to form a part of an integrated micrographic system for rapidly converting bulk graphic material to strip film form. It incorporates the making of copies on a reduced scale, projection on an enlarged scale and reproducing copy on an enlarged scale. The inventor claims as the first object the provision of a device to do the above and which at the same time is compact, simple and adjustable for a wide range of scale reductions and enlargements.

Films may be 35 or 70mm, black-and-white or color. They may be direct, negative or reversal, perforated or unperforated. The other units in the system are a processor and a printer. The processor is of the automatic type designed to handle the range of films used in the camera, and the printer is an Ozalid unit based on the diazo process and requiring no water for operation.

This is a completely self-contained unit, having built-in copy board and copying lights, as well as the copy enlarging camera. A folded optical path which is achieved by means of a mirror moving in synchronism with the camera eliminates the conventional tall column usually associated with large-scale reduction or enlarging. A double-sided vacuum copy board on the upper side of the machine permits inserting fresh copy on the outer half of the board while the inner side is in position for exposure. The copy board may be replaced by a ground-glass screen for the purpose of "viewing." For printing, the copying technique is reversed, the desired negative strip being placed in the camera and sensitized paper placed in the vacuum board. Naturally, an enlarged light is provided for use in the last mentioned operation and provision made for changing of lenses and for turning off the copy lights during projection or enlarging.

U. S. Patent 2,827,833: Willard F. Nieth, Alexandria, Va., assignor to Photogrammetry, Inc., Silver Spring, Md. □

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RELATED READING

Linhof Practice

Nikolaus Kappf, Editor-in-chief, Verlag Grossbild-Tecnik, Munich, Germany, pp. 218, $7.95.

While special emphasis in this beautifully illustrated book is given to the versatility of Linhof cameras, all professional photographers will want to read and study the informative text and explanatory diagrams and tables ranging in content from portraiture to photomicrography.

Considerable space is devoted to the utilization of camera movements for control of perspective, increased depth of field at relatively large apertures, filters and their use, artificial light and flash and the special applications of a large camera such as a Linhof to commercial and industrial photography.

Photographers will be proud to add this large volume (9¼" x 11½") to their library not only because of the wealth of information it offers, but solely on the basis of the hundreds of fine examples of top-notch photography — including many full-page four-color reproductions.

This comprehensive volume is a must for users of Linhof cameras and will be extremely valuable to all photographers. R.S.

The British Journal Photographic Almanac, 1958

Editor: Arthur J. Dalladay, Henry Greenwood & Co., Ltd., 616 pp., $2.00 (board covers), $2.50 (cloth bound).

This perennial favorite is celebrating its 99th year of publication. The format remains old-fashioned, but the content, as always, is as modern as the year it represents.

In addition to the cold, terse facts which one expects to find in a reference volume of this kind, there are warm, lengthy discussions of several subjects of considerable interest: color, microscopy and still projection.

A 19-page section is devoted to lists of materials for color and black-and-white photography and narrow-gauge cinematography; this includes speed, color-sensitizing and availability, and in the case of color is international, covering all known processes.

The guide to choice of materials for medical photography introduced in 1951 is again included, revised to date, as is also the useful table of keeping properties of solutions. Eight pages are devoted to a list of chemicals used in photography, and there is a list of textbooks on photographic history, technique and applications. J.J.H.

Photosensitors

by W. Summer, The Macmillan Co., New York, 675 pp., $21.

Do not be misled into assuming that the title of this impressive volume has to do with emulsion-making techniques. The term photosensitor, coined by the author, has been neatly applied to denote photo-electric devices which respond to the action of light. The book itself is subtitled "A Treatise on Photo-Electric Devices and Their Application to Industry."

Inasmuch as optics, light filters, measuring, detecting and timing devices are all included in this work, it will be of interest to industrial workers who are concerned with instrument design, operation, or building and care of equipment.

The first half of the book concerns itself with extensive description of photosensitors, circuitry, and optical equipment used with photo-detection setups. Extensive data being given on light sources, sources of energy for stimulation, and thermal inertia along with basic and advanced schematics for almost any imagined application.

The second part of the book gives extensive examples of applications, case histories, and general uses of these devices in industry for everything from machine operator safety to counting and recording apparatus. Highly sensitive triggering systems and color detecting systems may be of particular interest to the photographer designing recording equipment or instrumentation devices.

Not for the non-technical minded, but a most definitive work for the gadgeteers and electronics bugs. The bibliography of references offers an invaluable source for the researcher.

How To Cartoon For Amateur Films

by John Halas and Bob Privett, Focal Press, London and New York, 127 pp.

The second edition of this Focal Cine Book was published in England two years ago and is just making its way here now. Nonetheless, there has been such a need for literature in English on the subject of cartooning and animation techniques that this will be a welcome introduction to the tyro or, indeed, anyone who uses animation for titling, illustration or for training purposes.

The authors show how the basic cartoon becomes an animated drawing (even showing some simple devices for testing effects before photographing) and how the drawing is then converted to film.

Chapters on action and timing show simplified techniques for analyzing and portraying action, maintaining rhythm, and keying movement. Use of the story board for cartoon action, establishment of characters, keying to script and actual production of cartoons are shown and illustrated. There are also sections on using the camera (any camera capable of animation exposure) and making your own animation stand.

Although this book has been aimed at the amateur, it is an excellent introductory text-book or liaison for the cartoonist about to become animator.

Legal Aspects of Photography

by Robert Veit Sherwin, Greenberg, New York, 126 pp., $1.95.

Photography and the Law

by George Chernoff and Hershel B. Sarbin, 127 pp., $1.95 paper, $3.50 cloth.

It is perhaps ironic that two books on a similar subject should appear within a short time of each other. There has long been need for a good and definitive treatise touching on the subject of the law as it applies not only to photographers, but to their photographs and the usage of photographs. Here are two volumes with similar subjects but dissimilar approaches.

Robert Veit Sherwin, author of the first, is a New York attorney specializing in entertainment and theatrical activities. His previous works include "Sex and the Statutory Law."

It is, then, no great surprise that his coverage of the subject borders on the sensational although it is unfortunate that he leaves the impression that everyone is out to get the poor photographer. Such catchy chapter and section headings as "The Illegal Advertiser," "The Fact-Stretcher," "The Cheating Publisher" and so on, give the impression that statutes, juries, and judges make a specialty of harassing the photographer. Many of the subjects discussed would be as applicable to any private citizen.

Although many subjects are covered, some important aspects are omitted, and little reference is made as to actual statute cited, what the law really is (other than the author's interpretation) and he rarely gives reference to identifying names or any reference as to which courts made the decisions involved. Except in very rare instances does he even note to which

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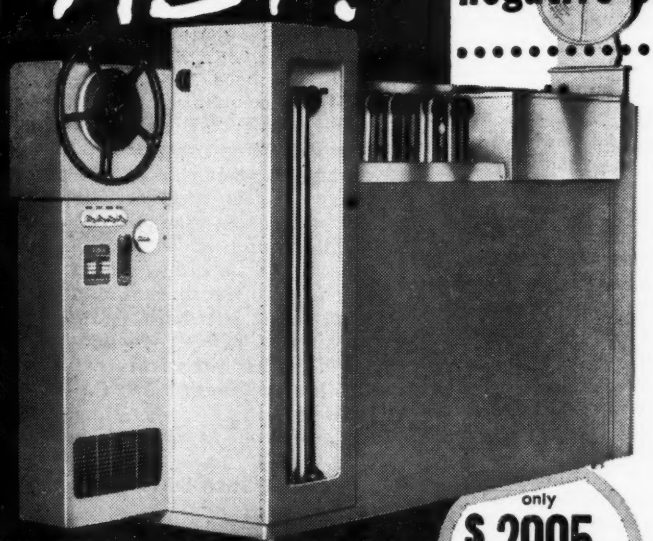

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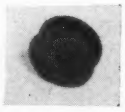

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state the statutes apply. One is left feeling that no advertiser, publisher, or customer is ever the friend of the photographer.

"Photography and the Law," on the other hand, is authored by a team (also New Yorkers) who have apparently specialized in all aspects of law concerning photographers, use of photographs, publication, and copyright. Chernoff once co-authored a column on the subject in the now defunct "Camera" Magazine, and with his co-author regularly contributes a column to "Popular Photography" magazine in which they offer up-to-date court decisions on the subject, and appropriate commentary on the rights and privileges of photographers. Chernoff has had as clients the American Society of Magazine Photographers, and many well known photographic illustrators, photo-journalists, authors, and other creative talents. Sarbin has counseled photographers and publishers.

Their approach to the subject is almost in complete opposition to the first book. They assume an affirmative and positive point of view; they assert that the photographer has certain rights and privileges, and that there are laws which protect him. Their book is well documented and cites not only excerpts from opinions of the court, but leaves no doubt as to what the law really is and what the judge actually said. They also add comment and explanation. Valuable reference material is available to give dates, names, places, and courts, and also the reports in which full records may be found. Anyone needing the law may find help here, and any attorney or legal advisor will be well rewarded to find that this book is a ready reference and not a vague recital of dangers lurking behind every box of film.

It's no great surprise that the two books contain different points of view and even conflicting statements on the same subject or laws. On licensing of photographers, copyright procedure, loss of film, proprietary rights, releases, and other subjects, the two volumes seem to be at odds. However, backed by the factual documentation and reference material given, "Photography and the Law" seems by far the best to go by.

Photographers, and industrial photographers particularly, must be aware of basic laws that apply to all citizens. "Keep out" is an indication that you may not trespass with or without a camera in your hand. This book's special concern about the law as it applies to photographers, their subjects, their clients, and the end use of their creative efforts, is well handled. Though he must realize that the laws vary from state to state even though precedents exist to protect a photographer and his rights, the professional photographer, or anybody who uses photography in his business, should read and own "Photography and the Law." It is an excellent reference book for the industrial photo department, it is an essential reference for the legal department. D.B.E.

Analytical Photogrammetry

by Everett L. Merritt. Pitman Publishing Corp., 242 pp., $7.50.

Everett Merritt is Technical Director of Photogrammetry, Inc., and is well qualified to produce a volume designed to present a practical and comprehensive concept of analytical photogrammetry. As he states in his introduction, ". . . the volume was inspired by the realization that a great variety of photogrammetric problems are solved with some form of the same general equations . . . following this realization . . . the writer decided to develop formulae wherever a gap in the complete analytic concept existed, whereby a self-contained, analytical concept could be presented within the boundaries of a medium sized volume."

Starting with fundamental concepts of definition and perspective, he skillfully handles the complexities of orientation and measurement, discusses derivation of equations, and gives examples from astronomical coordinates to geometry of tricamera installations.

Not a book for photographers, but for the quantitative analysis of their work, the volume is illustrated with drawings and diagrams, contains an excellent glossary of definitions and notations, as well as a brief but competent bibliography of cited references. Mr. Merritt's proposed and recommended formulae have been tested and found successful. This is not a primer or introduction to the field, rather an advanced textbook with some suggestions for solving problems.

Pocket Photo Data Book

Morgan and Morgan, Publishers, New York, 160 pp.; $3.95 standard, $4.95 de luxe edition.

By excerpting much of the most often used data from their Photo-Lab-Index, the publishers have presented a pocket-sized data book smaller than 4x7 inches, crammed full of data for quick reference away from the photo library. A useful but not too-well coordinated handbook. □

TRANQUILIZER

continued from page 19

finally settled on Eastman's Panatomic X, which is rated at ASA 25 but can be boosted with the new fine-grain developers. We were able to use it at ASA 320 by developing in Kerofine for 15 minutes rather than the usual 5 minutes.

The techniques used in the montaging of the figures involved considerable darkroom manipulation. The selected negatives were put in the enlarger and the figure that had number one position on the right hand side of the illustration was projected to the proper size on paper, just as it would have been on the final print. The figure was then traced on a blank sheet of paper so that the exact outline showed. The next figure, to the left, was to be smaller so the enlarger was racked down so it could be proportioned properly. It was also positioned so as to overlap the first figure. Its outline was then traced on the paper. This was followed by the next figure, the second from the left, and finally the last figure.

Dodging Mask

After the pattern was made, the first negative was put back in the enlarger, and the enlarger was racked up and focused on a piece of cardboard which was elevated at a predetermined height from the baseboard of the enlarger (approximately six inches). This cardboard was used as a dodging mask. The figure was traced on the mask and cut out. The enlarger was returned to its original position and refocused by placing the pattern in the easel. A test strip was made to determine proper exposure and developed for a predetermined interval, the mask being used to keep exposure from the background. When the proper exposure was found, it was marked on the figure on the original pattern.

At this point, eight sheets of paper were individually placed in the enlarger, all were exposed, and then placed in the paper safe. Now, the next figure was to be montaged. The negative was put in the carrier and focussed on the pattern as predetermined in the original step. A second mask was placed under the enlarger at the same distance as the first and the enlarger was then focussed onto the mask.

At this point it was outlined. Again, as previously, the mask was cut out so that it could be used.

After the second figure was cut out, the negative was refocused on the original pattern and a test strip was made, the proper developing time having been predetermined. The exposure time was found and noted on the pattern, as before. In making the test for the second figure, however, the amount of diffusion and all the necessary corrections, such as dodging, burning in, etc., were also noted for future reference. At this point, after exposure and corrections needed were determined, one sheet of paper was taken from the safe and the second exposure was made on it, using the second mask to keep the background white. This piece of paper was now developed for the predetermined time, and any corrections or necessary adjustments were made so that the remaining seven sheets could be exposed for the second figure.

Third Step

The third step was similar to the second—the negative was placed in the enlarger, focused on the pattern for size, the mask was made by placing it six inches above the baseboard, focused on the cardboard, cut out, then the enlarger was racked down to the original pattern, refocused, test strips made, corrections, exposure time determined for a predetermined time, the position of the figures checked, as were the corrections. If any additional adjustments were necessary, they were made, and the remaining sheets were exposed and put back in the paper safe. The fourth figure was handled in exactly the same way. By using eight sheets of paper we were certain to end up with two to four perfect montages.

In choosing the easel on which these enlargements were made, it was necessary to choose one

continued on page 58

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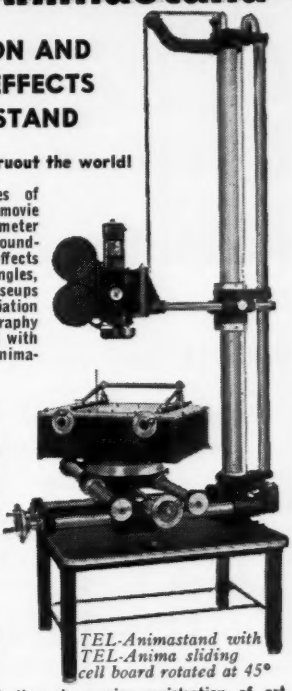

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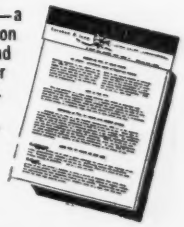

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Most Babcock & Wilcox Company products are made to specification and sometimes 1000 or more drawings are required for large boilers used in power generating stations. The number of drawings increases rapidly and because of the company's service responsibilities only a small percentage become obsolete.

Over 1,500,000 engineering drawings filled the tracing vaults. In addition, deterioration due to aging made handling risky and some form of replacement for older drawings was desirable.

It was seen that microfilming would not only offer solutions to these problems but provide protection against fire, flood and other disaster.

Selected was 70mm film since a resolving power of 120 lines per millimeter would be required by a 35mm camera to reduce a 30″ x 40″ drawing the necessary 24 times and still permit reproducing of original work as fine as five lines per millimeter. A 70mm camera, on the other hand, would reduce the same drawing only 12 times and would need a resolving power of only 60 lines per millimeter.

A 70mm overhead plantetary camera, manufactured by Microtronics Corp. was installed. A special mounting bracket on the camera made it interchangeable with the camera head of a Recordak Model C. The latter's standard copy table was replaced with one having a counterbalanced glass top. Reflections from the glass were eliminated by painting the ceiling in the immediate area a dull black.

The operation consists of filming and disposing of old backlog drawings and filming new drawings as they are made. With the camera in the Reproduction Dept., new drawings are conveniently filmed as they come for blueprints or other types of reproduction.

A current drawing filmed for the first time is stamped with a block containing space for ten digits. A check mark is placed in the block opposite the number corresponding to the drawing's revision number and the drawing is not refilmed until the revision number differs from the number checked on the stamped block.

All drawings, regardless of size, are filmed at the constant reduction rate of 12:1, which provides a copy field of 30″ x 40″. Larger drawings are filmed in multiple sections; smaller drawings do not fill the negative area.

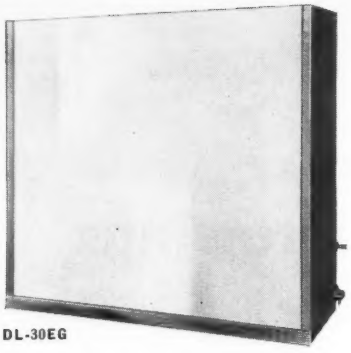
The rewind-tank method is used to process 100′ rolls of microfilm. It handles production of from four to six rolls of film daily.

Loading is done in subdued light, the rest of the processing under normal room lighting. Each solution is drained from the tank after use and the next added in its proper cycle. Since the tank requires only one-half gallon of working solution, fresh solution can economically be used for each roll.

After the final wash, also done in the rewind tank, the film is dried in a squirrel-cage-type drum. Kodak Photo-Flo added to the wash water permits even drying without spotting or sponging. The density reading of each roll is recorded, the resolution charts checked for sharpness and the roll is then cut into separate negatives for filing.

Negatives are filed in 3x5 kraft paper envelopes on which has been printed a block containing numbers and spaces from zero to nine and the revision number of the drawing negative marked in this block. Negatives of subsequent revisions are put into the same envelope and their revision numbers also marked in the block. □

Water - powered rewind equipment processes film. Rewind-tank method is used to process 100′ rolls of microfilm. Loading is done in subdued light while the rest of the processing is done under normal lighting conditions.



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TRANQUILIZER

continued from page 55

which permits the paper to be returned to an exact registration point. Otherwise, problems of overlapping of figures so that the registration remains the same for all would arise.

A multi-contrast paper was used with a filter change to compensate for each of the different figures montaged since each figure required a different paper grade. The plan was to have the first figure on the right normal contrast, the second slightly less contrast, the third less, and the fourth very soft. In addition, there was to be a difference in diffusion, with the first figure having none at all, the second figure having approximately 33% of the exposure diffusion time, the third figure 50% or 60% diffusion time, and the fourth figure was to be completely diffused.

Actually, the time involved in making the first of these montages before the system was finally brought to working completely smoothly was something between six and eight darkroom hours. After the technique became second nature, this time was cut in half. □

LIFE'S COMPUTER

continued from page 26

of the negative, the color temperature of the light used in exposing the original negative, or the type of filter with which the picture was taken, the size of the negative, and the desired print size. All of these related factors are automatically coordinated, the exposure relationships computed, and the correct exposure applied automatically through a tri-color filter system. The desired color correction is determined from a test print viewed in a color comparator.

The first step is to balance out the Type "C" Paper emulsion with a test negative; once the controls on the computer have been set, no further balancing of the emulsion will be necessary until a new batch is introduced. Next, the light source at which the negative was made is determined and compensated for on the computer. The latitude of Kodacolor allows the photographer to shoot a picture half stop under or even two stops over and still obtain a good print. Color shifts due to variations in weather conditions can easily be compensated for on the computer by adjusting the color correction dials.

The size of the negative and the magnification desired is determined next. A photo electric cell attached to the automatic filter turret is placed under the enlarger lens to determine the density of the negative. The technician then "zeros it in" on the computer. When determining the line density correction of an intermediate negative it has been found that the conversion requires approximately double the exposure required on an original color negative. The photo electric cell is removed during the exposures.

Four exposures are then made on a test easel. With the tri-color computer, a single sheet of 8 x 10-inch Kodacolor paper is exposed in four sections with a different negative on each section. The computer determines the length that each one of the tri-color filters is kept in front of the lens during exposures. The single test print, analyzed in the unit's color comparator will permit the technician to view the prints and make accurate color corrections. The technician merely dials in the color correction desired on the comparator and then sets the corresponding dials on the computer.

Once the proper filter and exposure has been decided upon and recorded on the computer, the test easel is taken away and a full-sized print is made. Any deliberated change in the color balance did not change the density of the print. Herb Orth says that "within one exposure we can come reasonably close to the print we want." □

TRENDS

continued from page 28

this type, good image quality over an extremely wide range of subject distances and no change in quality when the lens is used for a range of different picture sizes.

Herr Kilfitt shows curves for spherical aberration and coma which support these claims and the new 90mm *f*/2.8 Makro-Kilar lens is stated to incorporate the practical embodiment of the principle. The lens is said to be suitable for cameras which handle films ranging from 16mm to 6 x 6 cm. □

MIRROR ANAMORPHICS

In spite of the popularity of wide-screen processes in the entertainment field, they have not been widely adopted in industry. Nevertheless, wide-screen movies can be extremely useful in some instances to the industrial photographer; one example which comes to mind immediately is the use of training films to familiarize airline pilots with the approaches to new airfields.

In the May 1958 issue of the New York magazine, *International Projectionist,* some details of a new Japanese anamorphic adapter are given. The adapter gives an expansion ratio of two to one and, thus, is intended for Cinemascope prints. The unusual feature of the unit, called the Topcon Colorscope, is that it is of the mirror type instead of the more usual lens design. The Tokyo Kogaku Company, Ltd., which manufactures the unit, claims that it will correct distortion caused by steep projection angles; projection angles between 10 and 22 degrees are claimed as possible. Said to be of the same type as the Delrama attachment which is made in Holland, the Japanese unit is attached to the projection port instead of the projector itself. The price of the attachment is reported to be about two-thirds that of the usual cylindrical anamorphic lens.

A NEW METHOD OF PHOTOMACROGRAPHY

In the April issue of the Belgian magazine *Photorama,* published quarterly by Gevaert, Charles Engel, British medical photographer, describes an ingenious method of ensuring correct focus in photomacrography. He uses a rollfilm camera with an extension bellows attachment and a two-inch lens; this equipment permits magnifications between 1x and 5x. The light source is an electronic flash discharge tube which forms an adjustable and yet integral part of the camera and the subject is correctly lit as soon as the camera is in the taking position.

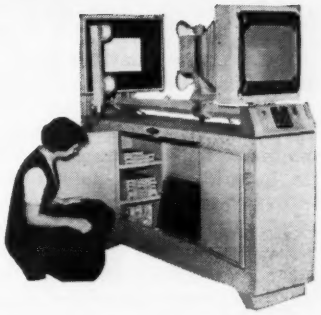
The author, in outlining the problems of close-up photography, shows that the problems of focusing and rapid operation are the chief ones with which the operator has to contend. In the unit described here, focusing is effected by two feelers fitted to a plate which is permanently fixed to the front of the apparatus. Each feeler can be pushed back against a set of three spring blades, and when the front of the feeler is in the plane of correct focus, all three spring blades are in contact. When both feelers are in this position, so that both sets of springs have made contact, the triggering circuit is closed and the flash is fired.

If the camera is at an angle to the subject, one feeler will be depressed more than the other, and since the three springs are in contact only over a range of 1/5000 inch and both must be in contact to fire the flash, no electrical contact will be made and, thus, no exposures will result.

Excessive pressure on both feelers will similarly break both sets of contacts *after* they have passed through the make position. But this is of no consequence, since the picture would have been exposed at the precise instant the camera was at the correct distance from the subject.

This is the neatest and most efficient method of ensuring correct focus in photomacrography that could be imagined, and Mr. Engel deserves the grateful thanks of any photographer engaged in this type of work for making his design freely available. □

New, low cost 11 x 14 CAMERA



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Top reproductive quality, heavy steel and aluminum construction, and features usually found only on expensive cameras combine to make the Sharpshooter your outstanding gallery camera buy. Features include 18 x 22½ copy board that tilts to horizontal position for easy loading . . . four 300 watt reflector flood lamps on pivotal arms . . . a reset timer that automatically controls shutter and lights . . . a Wollensak lens—with a focusing scale made to fit that lens . . . a diaphragm control . . . and a combination cut film and stay flat holder with focusing back that permits use of all size films up to 11 x 14. Camera measures 42 x 72—enlarges twice and reduces three times—requires only semi-skilled labor. Xerography back and vacuum back available as optional equipment.

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NEW EQUIPMENT

continued from page 15

eras, infra-red devices, and radar antennas. Called Torquer Model No. ARTQ-1, it is capable of high altitude continuous performance in ambient temperatures of 130° C. It is said the torquer eliminates radio-noise, sparking, wear, and explosion hazards. The torques are developed up to 15-inch pounds at a torquer weight of 6 pounds for the camera application and is adaptable to higher torque values.

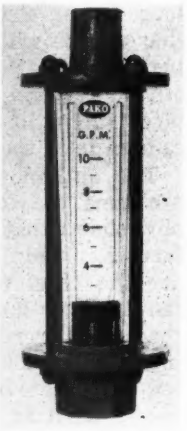
35mm camera 125

Voigtlander's new Vitomatic II 35mm camera features a coupled exposure meter and a life-size range-finder-view-finder. It also features a coincidence-type range-finder in the frame-type view-finder, Color Skopar *f*/2.8 lens ground for color, single-stroke film wind, automatic pop-up rewind and the SLK-V shutter with nine speeds (1 to 1/300 second). Price: $109.50.

New Material 126

Development of an emulsion and base for use in making positive intermediates and negatives for printing engineering white-print intermediates is announced by *Anken Chemical & Film Corporation.* Known as Supertransline, the product is printed by contact and can be handled in subdued light. It is designed for use in diazo machines and negatives can be used for printing on vellums.

Water Flow Indicator 127



Pako Corporation now offers a Sho-Flo Water Flow Indicator for a visual check of water flow rates. Designed to insure proper water flow through tanks of processing equipment in the photographic or x-ray industries the Sho-Flo is said to be ideal for any application where a positive solution flow is essential to total process function. The indicating range of the Sho-Flo Indicator is two to 10 gallons per minute, calibrated in one gallon graduations. Any water flow restriction for such reasons as valves partly off, plugged and dirty strainers or filters, is said to be immediately detected and corrected.

Tripod 128

A new elevating tripod, designed to fill the gap between pocket-style and the conventional three-section tripods, has been introduced by the *Photographic Importing & Distributing Corporation.* The Five Star Risomatic Tripod has a black ribbed top section; the remaining four sections are brass. It extends to 45½" without the elevator, 58" with geared drive elevator. Other features of the Five Star include legstops, a folding elevating crank, a positive lock for the elevator, and graduations on the elevator for parallax correction purposes.

Recording Paper 129

A new photo-recording paper for oscillograph testing equipment, has been developed by *Peerless Photo Products, Inc.* The new paper, Peerless Tru-Graf 1, has a

continued on page 65

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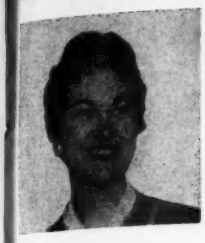

Keep posted on the latest developments in the photographic field. Each item listed below has a key number. For more information—without any obligation—circle that same number on the Readers Inquiry Card on the right.

by BOBBA JEAN MOODY, Editorial Associate

AUDIO

Sound Conversion Unit **201**
Binghamton Magnetic Industries Inc. Optical or magnetic tracks may be played individually or simultaneously with unit which fits all B&H Filmsound Projectors.

Tape Recorder **202**
Amplifier Corp. of America. Data on battery-operated, spring-motor unit—the Magnemite.

SERVICES

16mm Processing **203**
Cine-Graphic Film Lab Inc. Includes reversal, negative, positive and custom high-speed processing.

16mm Service **204**
The Calvin Company. Provides consulting on script and editing, production, printing, etc.

Motion Picture Services **205**
Eagle Film Laboratory. Brochure on various 16mm motion picture services for industry.

Reversal Processing **206**
Lab-TV. Professional 16mm black & white reversal processing. Circular available.

16mm Film Needs **207**
Film Services, Inc. Fills all needs from original negative to complete composite.

Motion Picture Lab **208**
Fischer Photographic Laboratory, Inc. Complete 16mm color and black & white services including sound.

16mm Developing **209**
Video Film Laboratories. 16mm developing and printing for Anscochrome, reversal, negative, etc.

Sound Editing **210**
Ross-Gaffney Inc. Film editing with narration, music and sound effects.

Color Film Duplicates **211**
Eskay Color Print Inc. Specialists for quality color film duplicates for 16mm sound and silent films.

16mm Lab Service **212**
Motion Picture Labs Inc. Brochure detailing complete 16mm services available.

Movie Duplicates **213**
Hollywood Movie Labs. Information on 8mm and 16mm film duplicating.

One Stop Service **214**
Douglas Productions. Price list also includes information on motion picture procedures, glossary of printing terms.

Reversal Process **215**
Kin-O-Lux Inc. Specializes in reversal and negative developing, dupe negatives, color and b&w reversal prints.

Music & Sound Effects **216**
Filmsounds, Inc. Detailed rate schedule and information on library of music and sound effects.

Strip Film Production **217**
Colind Photography. Data sheet lists details and prices on strip film production services.

Custom Processing **218**
Jack Ward Color Service, Inc. Complete service on Ektachrome, Anscochrome, Kodacolor, Ektacolor.

Slides & Filmstrips **219**
Frank Holmes Labs Inc. Catalog on color filmstrips, slides, Ansco 538 processing.

Negatives & Prints **220**
Colorfilm, Inc. Complete laboratory for negatives, prints and color filmstrips.

Daily Service **221**
Film Associates of Dayton. Daily reversal processing plus complete 16mm services.

LIGHTING

Spotlights **222**
The Strong Electric Corporation. Brochure which tells how spotlights can best be utilized in theatres, schools, hotels, and auditoriums.

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101	107	113	119	125	131	137	143	149	156	163	170
102	108	114	120	126	132	138	144	150	157	164	171
103	109	115	121	127	133	139	145	151	158	165	172
104	110	116	122	128	134	140	146	152	159	166	173
105	111	117	123	129	135	141	147	153	160	167	174
106	112	118	124	130	136	142	148	154	161	168	175

NEW FREE LITERATURE

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201	209	217	225	233	241	249	257	265	273	281	289
202	210	218	226	234	242	250	258	266	274	282	290
203	211	219	227	235	243	251	259	267	275	283	291
204	212	220	228	236	244	252	260	268	276	284	292
205	213	221	229	237	245	253	261	269	277	285	293
206	214	222	230	238	246	254	262	270	278	286	294
207	215	223	231	239	247	255	263	271	279	287	295

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							606	622	638	654	670
501	516	531	546	561	576	591	607	623	639	655	671
502	517	532	547	562	577	592	608	624	640	656	672
503	518	533	548	563	578	593	609	625	641	657	673
504	519	534	549	564	579	594	610	626	642	658	674
505	520	535	550	565	580	595	611	627	643	659	675
506	521	536	551	566	581	596	612	628	644	660	676
507	522	537	552	567	582	597	613	629	645	661	677
508	523	538	553	568	583	598	614	630	646	662	678
509	524	539	554	569	584	599	615	631	647	663	679
510	525	540	555	570	585	600	616	632	648	664	680
511	526	541	556	571	586	601	617	633	649	665	681
512	527	542	557	572	587	602	618	634	650	666	682
513	528	543	558	573	588	603	619	635	651	667	683
514	529	544	559	574	589	604	620	636	652	668	684
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203	211	219	227	235	243	251	259	267	275	283	291
204	212	220	228	236	244	252	260	268	276	284	292
205	213	221	229	237	245	253	261	269	277	285	293
206	214	222	230	238	246	254	262	270	278	286	294
207	215	223	231	239	247	255	263	271	279	287	295

ADVERTISEMENTS

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501	516	531	546	561	576	591	607	623	639	655	671
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503	518	533	548	563	578	593	609	625	641	657	673
504	519	534	549	564	579	594	610	626	642	658	674
505	520	535	550	565	580	595	611	627	643	659	675
506	521	536	551	566	581	596	612	628	644	660	676
507	522	537	552	567	582	597	613	629	645	661	677
508	523	538	553	568	583	598	614	630	646	662	678
509	524	539	554	569	584	599	615	631	647	663	679
510	525	540	555	570	585	600	616	632	648	664	680
511	526	541	556	571	586	601	617	633	649	665	681
512	527	542	557	572	587	602	618	634	650	666	682
513	528	543	558	573	588	603	619	635	651	667	683
514	529	544	559	574	589	604	620	636	652	668	684
515	530	545	560	575	590	605	621	637	653	669	685

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Hinelight Corp. Information on illumination of technical subjects for photographic or visual purposes.

CINEMATOGRAPHY

Titles 225
Knight Studio. Titles produced by craftsmen for motion pictures, slidefilms and TV.

How to Use Your Cine-Voice 226
Berndt-Bach Inc. Instruction booklet telling how to make 16mm sound movies.

Simplex Dryers 227
Simplex Specialty Co., Inc. Descriptive illustrated folders on complete line of print dryers.

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Offset Plate File 239
Colwell Litho Products, Inc. Colight system files 12 x 18 envelopes in specially designed cabinets of 250-job capacity. Job data appears on envelopes.

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Elwood Photric-Timer 240
Fotomatic Corp. Flyer on automatic exposure control featuring remote control system. May be used with any enlarger.

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Developing Tank 248
Ebe Mfg. Co. Specifications on Daylite Roll Film Developing Tank.

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Pocket-size booklet describing the action and use of the new Clayton P-60 fine grain developer.

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Temperature Control Sink 250
Hollywood Camera Co. Complete specifications and price list on temperature control sink.

Plastic Pumps 251
Broadbent-Johnston, Inc. Catalog describing specifications on plastic pumps for use with photo acids.

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Reliance Engineering & Manufacturing Corporation. Coolflo color processor. Complete description.

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American Photographic Instrument Company, Inc. Plans and builds all types of equipment.

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Edwal Scientific Products Corp. What to use when processing fine grain film, high-speed films. Hints on print making.

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Movie Control 269
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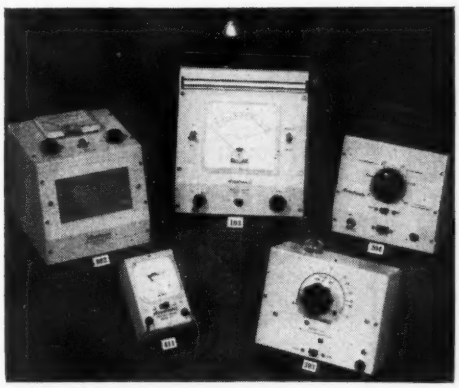

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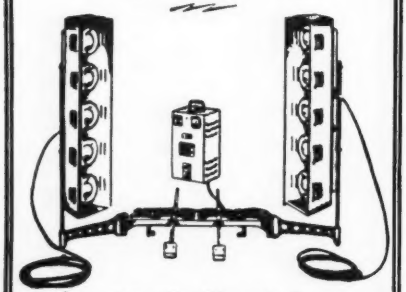

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Fairchild Camera and Instrument. Latest data on industrial application and specifications of Fairchild Motion Analysis Cameras.

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Aerotronic Associates Inc. Testing equipment for all types of camera equipment. Details available.

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Emde Products. Uses of and data on aluminum frames and foil masks.

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National Photo Labs. 35mm b&w slides from any size photo or negative. Catalog available.

Around the World Backgrounds **277**
Title-Craft. How scenic views of exotic places can serve as background for slide and movie titles.

Color Slide Duplicates **278**
Hamilton Color. Descriptive material on duplication of 35mm and stereo color slides.

MISCELLANEOUS

Polish **279**
Glass-Wick Co. How-to-use brochure on Glass-Wick non-evaporating lens and frame polish.

Spanner Wrenches **280**
Thoro Products Co. Descriptive literature on units featuring tool steel, drawn and tempered pin or blade.

CarPac **281**
Carter Mfg. Co. Data on camera mount that holds two men plus equipment atop the car.

Lens Specifications **282**
Nikon Inc. Angle of view, diaphragm stops, mount, distance scale, and filter size charted for Nikkor lenses.

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Philip A. Hunt Company. Description and uses of Kempax packaging for photographic chemicals.

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New York Institute of Photography. Spare-time training in photography described in book.

Instruction **285**
Brooks Institute of Photography. Booklet on courses and opportunities in photography.

Catalog K **286**
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Professional Cine Products. Complete information on 400-foot conversion.

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Chart-Pak, Inc. New brochure describing 72 basic Contak shading films.

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Caprock Developments. Limited number of brochures on Caprock Universal Gray Contact Screens.

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Belford Co. Uses, sizes, types of Sellebrity four-position easel binders.

Copying Radiographs **291**
Ansco. Brochure of copying radiographs with Anscochrome and Super Anscochrome.

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NEW EQUIPMENT

continued from page 60

high speed orthochromatic emulsion of medium-contrast which is said to pick up clearly the faint lines of the timing device without overexposure and blurring of impulse trace. The paper is coated on two different paper stocks, type .005, a standard weight alpha sulphite paper, and type .003, an extra-thin 100% rag content base with wet and dry tear strength. Both papers are matte finished, to take pencil, ink, and ball-point markings clearly. Tru-Graf is available in 5" to 12" widths and roll lengths from 100 feet up to 475 feet.

Zoom Lens 130

Voss Photo Corporation has introduced the Votar *f*/2.8, 8mm Zoom Lens with a variable length ranging from 12½mm to 38mm with a visible color indicator of focal length change incorporated into its finder system. Fully color

corrected, the Votar Zoom Lens has click diaphram stops and focuses from five feet to infinity. It is designed to fit most popular 8mm "D" mount movie cameras.

Braun Super III 131

The *Braun* 35mm Automatic Super III features interchangeable lenses, bayonet mounts, coupled to range-finder, self-coupling to exposure settings. It also provides built-in luminous view finder for 35, 50, 90 and 135mm lenses.

Crab Dolly 132

Moviola Manufacturing Company's new crab dolly is 64" long, 34" wide and has a maximum boom height of 60" and a minimum boom height of 22". A 12" hi-hat can be used for additional height. The dolly features all aluminum construction and eight ball-bearing wheels with 10" O.D. pneumatic tires. The boom features a levelling

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One of the primary problems in industry in the selection of a supervisor for a photo department is to find a man whose experience combines a technical knowledge of photography with the management skills necessary to administer such an operation. Therefore, this course will deal exclusively with management problems, and only persons actively engaged in the supervision of industrial photo departments may enroll.

Men who have years of experience as photo administrators in industry will lead the seminar; here are some of the areas to be covered:
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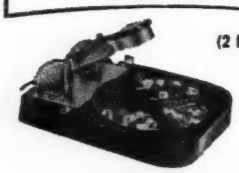

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plate at the top for easy levelling. Oil supply is furnished from the accumulater which is charged by hand pump or 115 volt AC-DC electric pump. The dolly provides for crab and conventional steering.

16mm Film Cases **133**

Industrial Fibre Products Co. is manufacturing 16mm film cases which can also be used for magnetic tape recordings. Constructed of heavy duty imported Swedish fibre, the cases feature metal corners, web strap with buckle and mailing card holder.

Unimark II **134**

The *Unimark II*, a 35mm electric eye automation camera, features: framed 1:1 viewfinder, a 4-element Leidolf-Wetzlar 50mm *f*/2.8 lens with hard coating, rapid advance lever that winds film, cocks shutters and sets counter; Prontor SLK light value shutter, with speeds from one second to 1/300th second, M and X synchronization; built-in self-timer; fully-removable back for easy loading, film take-up that winds in reverse. Price: $79.95.

Transcription Player **135**

The Continental 16VP2-9 by *Califone* features an arm rest which automatically secures the pickup arm when the player is carried. It

also features an outlet for making tape recordings from records that is also designed to act as the second channel stereo outlet for playing stereo discs. The player is said to provide from 20-20,000 cycles.

Exposure Computer **136**

A revised edition of the Kodak Graphic Arts Exposure Computer for solving exposure problems has been announced by *Eastman Kodak Company*. The computer can be used to determine the exposures for making half-tone negatives with Kodak Contact Screens. The computer dials have been extended to cover a wide range of exposures for a number of situations that confront the graphic arts specialist. The complete Kodak Graphic Arts Exposure Computer contains a dial computer, a reflection density guide, calibration record sheets and a twelve-page illustrated instruction book describing the different uses of the computer.

Weltaflex Camera **137**

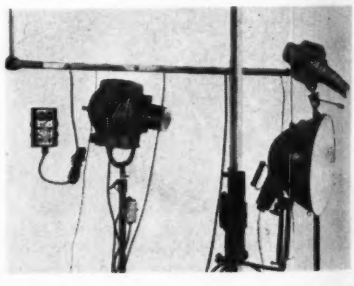
The Weltaflex twin lens mirror reflex camera by *Feinmechanik-Optik* features: built-in automatic film counting device, hinged swing-in detachable camera back, focussing knob with depth of field and distance scale, locking device against double or blank exposures, flash synchronized central shutter, body shutter release with cable release connection and detachable finder hood with magnifier convertable into a frame finder.

Silicone Lubricator **138**

Pylon, by *FilMagic*, is a silicone lubricator for tape recorders. It is claimed that mounted on a tape recorder, the FilMagic silicones provide lubrication and protection for both tape and heads, and improves frequency response.

Outlet Systems **139**

Pierceway Multiple Outlet Systems, a product of *A. H. Massey, Inc.*, is claimed to be completely safe, accessible and capable of handling full professional photo studio



and darkroom work loads. Made of fire and heat resistant plastic, Pierceway components are attached to existing two-wire or three-wire circuits and list 68 different types of feed units, outlet sections and special features.

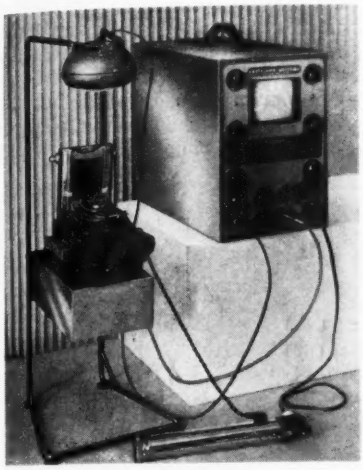
Movie Camera **140**

The Arriflex 35, Model IIB from the *Kling Photo Corporation*, has a mirror reflex shutter which rotates at a 45-degree angle to the axis of the lens. It is made of special glass with dimensional stability. This mirror shutter rotates in a true single plane with a tolerance of plus/minus .003mm. It is provided with a fixed shutter opening equivalent to 180 degrees. In each phase of its operating cycle, 100% of the transmitted light is said to reach the film and the eye intermittently. The motion picture camera is elec-

tric motor driven. The standard wild motor is rheostat controlled to give continuous camera speeds with approximately 5 FPS to 50 FPS.

Motion Analyzer **141**

The ServiShops Motion Analyzer Mark II by the *National Camera Repair School* is said to enable photography dealers to test shutter speeds, contacts, flash sychy, solenoids, bulb output, batteries, movie cameras, movie projectors, exposure meters, gearing,



time intervals, shutter opening, flash delay and other factors. It features a direct *f*-stop scale calibration.

Drafting Film **142**

The development of Ageproof Film, a tear-proof drafting film is announced by *Eugene Dietzgen Co.* It is said that erasures, folding handling or physical force have virtually no effect on the drafting surface. It is made from DuPont Mylar Base.

Slide Projector **143**

The *Minolta* Mini-44 slide projector projects both super slides and 35mm slides. The projector features a 75mm Rokkor, *f*/2.5 lens, 35mm slide carrier, adapter for Airequipt changer and vinyl carrying case with shoulder strap.

Movie Titling Set **144**

The New Movielux Movie Tilting Set by *Joseph Struhl Company, Inc.* contains a total 700 letters and numbers, in three colors—red, white and yellow with 350 of the letters and numbers in the three-quarter inch size and 350 in the one and one-eighth inch size. The set includes a white and black self-supporting easel board and four additional backgrounds of red, blue, green and yellow. It also contains a transparent back-

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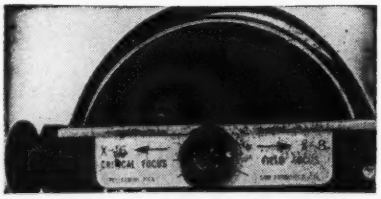

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ground which is placed over the board and also over the colored backgrounds for varied effects. The letters and numbers are plastic and adhere by themselves directly to the transparent background. Four spring clips hold the plastic backgrounds to the easel board, which is supported by wood stands. The set includes a compartmented alphabetical box for storage of the letters. Price: $5.95.

Magnetic Tape 145

A new magnetic tape by *Audio Devices, Inc.* is claimed to solve quality and storage problems. The layer-to-layer magnetic print-through has been reduced so low as to cause no harmful effects during decades of storage, the manufacturer claims. Called Master Audiotape, it features such characteristics as frequency range, signal-to-noise ratio and is completely interchangeable on recording machines with standard tape.

Slide Trays 146

Mico Photo Products announces a new Dustless Super Tray. Each slide tray has a tray seal consisting of two transparent polyethelene parts—an upper cover and lower case that snap-fit, enclosing the tray securely in a complete seal. This is said to protect slides from dust and finger marks.

Cord Power Distribution 147

Mole-Richardson Co. has developed cord and box sets designed for use with low-wattage lighting equipment. A maximum of 3000 watts per set is recommended by the manufacturer. All cords are 25 feet in length with one, two, or four receptacles, as well as a three-receptacle box with switches for controlling lights from a central location. Plugs and receptacles will be furnished for twist-lock or house set-up.

Reflex Camera 148

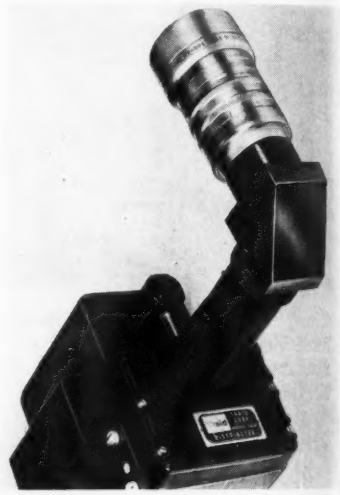
The Topcon-R Camera distributed by *Tokyo Optical Company, Ltd.* features a 58mm *f*/1.8 six-element Auto-Topcor lens in automatic diaphragm mount, 1:1 split-image Pentaprism eye-level viewfinder, rapid-return mirror that is said to eliminate image blackout, focal-plane shutter with speeds from one to 1/1000th second, X and F synchronization, single-stroke rapid wind lever, folding rewind crank, focusing hood that interchanges with waist-level finder, and interchangeable bayonet lens mount.

Copy Camera 149

The *Kargl* Senior Model Copy Camera features Red Dot Artar lenses in focal lengths of 19, 30, and 47½ inches installed in the turret. The vacuum frame copy holder holds copy 48" x 72" or 48"-wide roll copy. Copy and film trucks are motorized, controlled from panel near lensboard. The copy camera requires a minimum ten-foot ceiling and 16' x 39' floor space.

Periscope Attachment 150

A new periscope attachment is claimed to permit "around-the-corner" photography with any 16mm motion picture camera. Available from the *Traid Corporation*, the Fotoperiscope rotates a full 360 degrees and is locked in place by a knurled ring. Built-in cross-



hairs can be adjusted and locked in a similar manner. Either "C" mounting threads or the GSA-type mounting with bolts can be provided on either end, so that the system may be used with nearly all combinations of 16mm cameras and lenses.

Long Film Rolls 151

Long rolls of Kodak Ektacolor Film is now available for use by professional photographers from *Eastman Kodak Company*. In 100-foot lengths and in 35mm, 70mm, and 46mm in width.

Roll Film Camera 152

Repro Graphic Machines, Inc., selling agents for *Klimsch & Co.*, announces the introduction of the new Klimsch Expressa, a roll film camera with magazines for three widths of film and four screens. It has solid brass focusing bars and grippers for quick setting with precision, and automatic diaphragm control for fast operation.

Frame Binder 153

A 3½ x 4 aluminum frame binder with three sizes of silver

continued on page 71

Association News

MITCHELL BADLER, Managing Editor

Canadian Convention

The 1958 Canadian Convention and Photographic Trade Show will be held in Montreal, Quebec, on October 21-23 at the Queen Elizabeth Hotel. All inquiries concerning the convention should be addressed to the *Master Photo Dealers' & Finishers' Association*, Queen Elizabeth Hotel, Montreal, Quebec, Canada.

Photokina Visitors Offered Reduced Plane Rates

The Photographic Manufacturers and Distributors' Association, in cooperation with *Photo Administrators, Inc.*, is sponsoring a round-trip flight, at a reduced rate, to enable members of the industry to visit "Photokina 1958." The cost of the round-trip will be $350 per person as compared with $635 for the corresponding regular tourist flight. Departure from New York will be on September 24, 1958 to Frankfort, Germany; return flight will start from Paris or an alternate European departure point, on October 17, 1958. Although travellers will be free to arrange their own schedules, PMDA will assist visitors in the procurement of hotel reservations. Interested parties should contact Wilfred Knighton, Secretary, PMDA, 350 Lexington Ave., New York City or Paul Cherney, Chairman, PMDA Export-Import Committee, c/o Cinefot International Corp., 303 West 42nd Street, New York City.

Slide Contest

Six prizes totaling $300 will be awarded in the Emde Slide Sequence International Competition being sponsored by the Color Division of the *Photographic Society of America*. Entries can be 35mm, super or 2¼ x 2¼ size, but each entry must contain slides of one size only. Formal announcement of the winners and projection of the winning sets will be part of the program of the National PSA Convention in Philadelphia in October. Entry blanks and information about PSA membership and the contest can be obtained from PSA headquarters, 2005 Walnut Street, Philadelphia 3, Pa.

Car Lighting

A recent meeting of the *Industrial Photographers' Association of Michigan* featured a car lighting demonstration by the GM Advertising Studio.

Microphone Discussion

A recent program of the *SMPTE New York Section* featured a discussion by Philip C. Erhorn of microphones — their types, characteristics, placement and application to pick-up problems in recording. He covered the proper selection of microphones and accessory equipment.

NAVA Meeting

The annual meeting of the *National Audio-Visual Association* in the Terrace Casino of the Morrison Hotel in Chicago was held on July 28. Proposed changes in the By-Laws and other association business were considered.

SMPTE Convention

Films and television in industry and education will be the theme of the 84th semi-annual convention of the *Society of Motion Picture* and *Television Engineers*. The convention will be held from October 20 to 24 at the Sheraton-Cadillac Hotel in Detroit. An equipment exhibition will be featured.

Those wishing to present papers at the convention should contact the editor at Society Headquarters at 55 West 42nd Street, New York 36, N. Y. for specific information as to requirements and categories. All abstracts must be submitted by September 22. □

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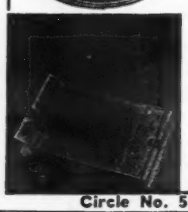
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ARTICLE
NEWS
SPEECH
PHOTO
Briefs

by RALPH SELITZER, Assistant Editor

Mirror Device Creates Figures

A recently filed patent explains many of the weird and fanciful figures seen on television and motion picture screens. "Lumia" figures are produced by flashing on the screen the reflections from a very intense light. The mirrors used are plastic or steel and very brightly coated. They are "masked" in various designs and are capable of being twisted and distorted. A slit representing a mouth is manipulated to simulate talk, eyes roll and wink, feet dance and arms wave. The results can be pink elephants, Halloween ghosts and similar imaginative figures.

Five-Ton Camera

A five-ton camera in use at the Convair Division of General Dynamics Corp., San Diego, will reproduce highly accurate templates that serve as jet aircraft component patterns. It is 30 feet long, almost nine feet high and has an accuracy of 1/2,000th inch in up to 5x12' reproductions.

The camera built by Robertson Photo-mechanix, Inc., will expose a sensitized metal plate to projections of drawings and the developed image can then be cut out and used as the actual template. Metal plates as heavy as 250 pounds can be supported. The camera can be focused either manually or electrically.

Camera Guarantee Extended

Standard Camera Corporation has extended its camera guarantee from one to two years on its Praktina FX and Praktica FX3 and FX2 cameras.

Sixty-Second Kitchen

The Consolidated Edison Company of N. Y., Inc., is using photography to sell housewives on the idea of modern kitchens and indirectly selling its products—electricity and gas.

A recently established Kitchen Planning Service in a New York City office helps housewives lay out a modern kitchen with scale model appliances. A picture of the model kitchen is then taken with a Polaroid Land camera and is given to the housewife along with kitchen planning literature and a list of kitchen modernization dealers. The housewife can then walk into a dealer's office and tell him, "That's the way I'd like my kitchen to look." □

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SCHOOLS

CAMERA REPAIRMEN greatly needed! You can learn manufacturers' service methods at home in your spare time! FREE big illustrated book tells how! Write today. NATIONAL CAMERA REPAIR SCHOOL, Dept. N-8, Englewood, Cal.

FOR SALE

Aerial camera 70mm type CA-11 continuous strip camera complete with remote control unit, Servopower unit, Synchronizer Power unit, Servopower unit viewer head, master control unit, auxiliary control unit and cables all brand new, never used in original cases. Original cost $30,900.00, will sacrifice at fraction of original cost. Make offer. Call Miss Flynn, 2 Llewellyn Ave., Hawthorne, N. J., Hawthorne-7-7894.

EASTMAN 8x10 autofocus enlarger, f4.5 lens, diffusion discs. Reducing attachment, Kodar f 7.9 lens. Good condition $250 f.o.b. Photographic Bureau, Ætna Life Affiliated Co., 151 Farmington Ave., Hartford, Conn.

NIKON SHADOWGRAPH DEMONSTRATOR, model complete with 20x and 50x objectives: surface smoothness device; aluminator and micrometer stage; the ideal table model optical projector selling below cost, firm $895.00. Tuthill's Photo Center, 166 Washington St., Binghamton, New York.

KODAK CINE SPECIAL II OUTFIT with 25mm 1.4 ektar: 15mm ektar: 63mm F2 ektar: 50mm F1.6: 102mm F2.7: 152mm F4.5: 230mm F3.8: objectives: extra 100 foot magazine: deluxe case: a very clean outfit and priced to sell; firm $1295.00. Tuthill's Photo Center, 166 Washington St., Binghamton, New York.

RETOUCHING

For the finest in portrait negative retouching send your negative to the Enterprise Retouchers 13625 Leroy Ave. Cleve. 11, Ohio. Tel. CL 2-3387.

HELP WANTED

Chemist with experience in chemistry of photography wanted to accept free lance assignments connected with Type C and black & white problems. Box 138, Industrial Photography, 10 E. 40 St., New York, N.Y.

SITUATIONS WANTED

Well qualified graduates of Brooks Institute, fully trained in all phases of professional photography (still and motion), are available if contacts are made well in advance of graduation. Your employment inquiry will receive prompt attention. One or more of our selected, advanced students will correspond with you regarding your position. The demand for Brooks graduates is always greater than the supply. The earlier your request is received, the sooner the placement can be made. Brooks Institute of Photography, 2190 Alston Road, Santa Barbara, California.

INDUSTRIAL PHOTOGRAPHER with varied experience on architectural subjects and feature stories, welcomes responsible position with advancement. Represents magazine editors. Manages and operates studio in upstate N. Y. Knowledge of color with art background. Enjoys working with people. Will travel. Box 139, INDUSTRIAL PHOTOGRAPHY, 10 E. 40th St., New York 16, N. Y.
For your immediate information I am 43 years of age, married with two daughters, aged eight and ten. I attended Syracuse University, Liberal Arts, am a native Syracusan and have traveled extensively throughout the USA (mostly army Air Corps).
I represent Black Star and Globe of New York but have worked mostly with the former.
References gladly furnished upon request.

PRODUCTION manager, thoroughly experienced in all phases of 16mm motion picture production, desires permanent position or assignments. Free to travel. Box 137, INDUSTRIAL PHOTOGRAPHY, 10 East 40th St., New York 16, N. Y.

DIRECTOR-CAMERAMAN, EDITOR. Young man (25) married desires position with industrial plant. Employed as director-cameraman, editor by Audio Visual Service USOM/L, Beirut, Lebanon. Résumé on request. Write: Hrayr Toukhanian, 714 Glenwood Ave., Syracuse 7, N. Y. Phone: GR 5-4614.

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NEW EQUIPMENT

continued from page 68

paper masks is announced by *Emde Products, Inc.* The slide binder with masks will accept 2¼ x 3¼ films and full lantern slide size, as well as the new Polaroid transparencies.

Portable Flash Unit 154

The *Dormitzer Electric & Manufacturing Co., Inc.* announces the Dormitzer Transistor Sixty, a transistor portable flash unit. The unit operates from built-in nickel-

cadmium Dynaseal batteries and has a built-in charger switch.

Extension Bellows 155

Extension Bellows for the Praktina FX camera, for use with the normal, wide-angle or moderate telephoto lenses supplied for the Praktina FX camera, is now available from *Standard Camera Corporation.* When fully closed, the Praktina FX Extension Bellows is said to be one of the shortest in existence, permitting its use in that position for very small magnification ratios. The maximum extension of the Bellows is 2.5 inches. Its extension, when closed, is 0.3 inches. The Bellows can be used with short-barrel telephoto lenses to provide a focusing range from 2" to infinity.

Lens Shade 156

Par Products Corporation announces a new lens shade for the Hasselblad Superwide camera. Made of aluminum, the shade is approximately 4" square and features the standard interior matte finish plus anti-reflection serrations. Exterior finish is clear anodize. The lens shade mounts directly on the 35mm Zeiss Biogon lens by means of a specially de-

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signed collar which is adjusted by a knurled screw.

Pocket Microscope 157

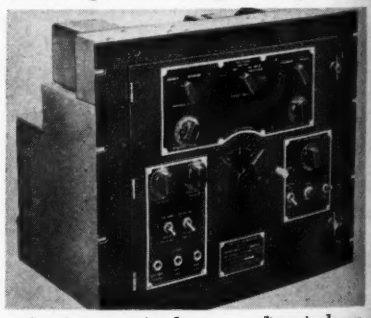
A small, 5⅜" long, pocket microscope is available from the *Edmund Scientific Co.* Power is adjusted by sliding tube in or out and setting is by means of a screw set at 20x, 40x or 60x. Milled ring near objective lens is turned to bring objects into focus. Chrome tip reflects light on objects viewed. Field of view at 20x is 2.8mm, at 40x is 2.4mm, and 60x is 2.1mm. Price: $3.95 postpaid.

Nursery Camera 158

The Beattie-Coleman Nursery Camera allows babies to be photographed immediately after birth. Within minutes after birth, babies in their bassinettes are placed under the camera on a center tray. The pre-focused lens, together with an adjusted synchronous electric flash is said to take perfectly exposed portraits. An electric magazine advances the next frame, and the Nursery Camera is ready for the next baby's portrait. A motor is contained in the magazine and starts when the camera shutter closes. It continues to operate until the film has advanced one frame, then automatically stops and locks in position. It works on a 110-120 volt 50-60 cycle AC power source. The aperture for 35mm takes 1-5/32" x 1-11/16" picture. The 70mm takes 2½" x 3⅜" portrait. Darkroom or daylight loading can be used. The camera has 100 feet capacity and takes up to 700 baby portraits on 35mm film and 350 on 70mm.

Signal Generator 159

Telectro Industries Corp. model TA-1040, VOR Signal Generator provides standard signals for accurate testing and calibrating VOR (VHF Omnirange) equipment. It has been specifically designed for the Civil Aeronautics Administration and their type CA-1628. The generator is designed either for portable use or for rack mounting in a standard 19-inch rack. All external controls and switches are located on the front of the black wrinkle-finish panel. Accessibility to the generator and its individual adjustment controls is made possible by the removal of the rear protective cover and unlocking of the front panel door which opens on hinges. Input and



output receptacles are located on the back of the chassis along with operating and spare fuses.

Remote Control 160

Tech Photo Products has developed the Tech Vanguard Radio Remote Control that works on 115 volts, a standard penlite cell (1½ volts) and a standard 22½ volt B.C. battery. It is said that the batteries are capable of operating the transmitter well over 15,000 times without replacement. The transmitter weighs about 3.5 ounces. □

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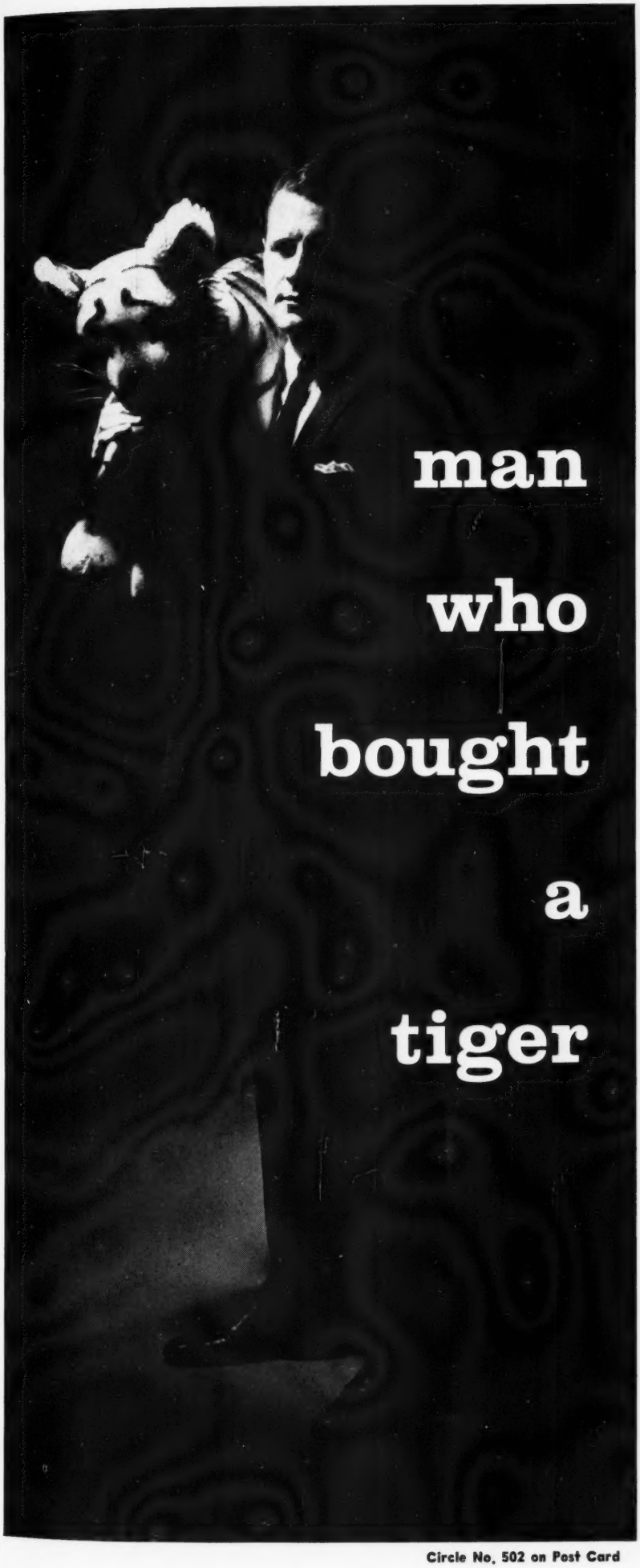

Once upon a time there was a man who bought a tiger. He loved it, cared for it, nurtured it until one day, the tiger ate him up.

However, like our foolish friend, many photographers buy tigers, especially when it comes to high-speed films. Most high-speed films look good when it comes to manufacturers claims and specifications. But in actual practice, results are grainy and lack resolution.

Knowledgeable photographers use the new Ansco Super Hypan® film. Super Hypan is fast. Exposure indexes of 500 are normal with speeds of more than 1000 easily attainable with extended processing. The grain and resolution characteristics are the finest ever attained in any high-speed film. In fact, Super Hypan's quality is more like that of a medium speed film.

Why not try new Ansco Super Hypan, a controllable kitten that loves to do your bidding. It's available in roll, sheet, and 35mm sizes as well as 4 x 5 film packs.

Ansco, Binghamton, N. Y. A Division of General Aniline & Film Corp.

Ansco

Super Hypan

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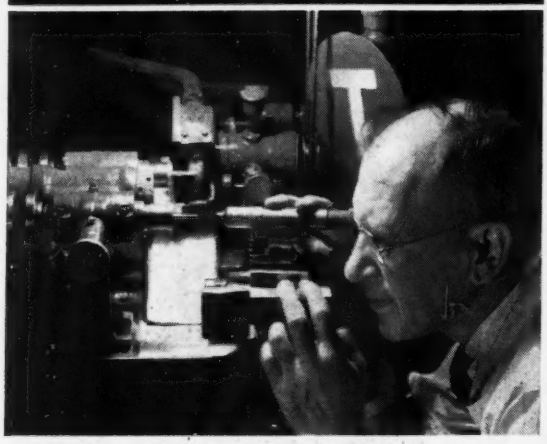
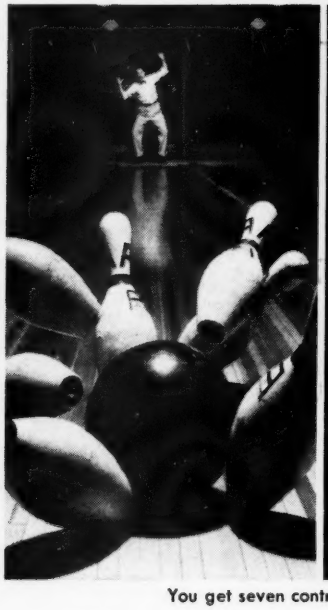
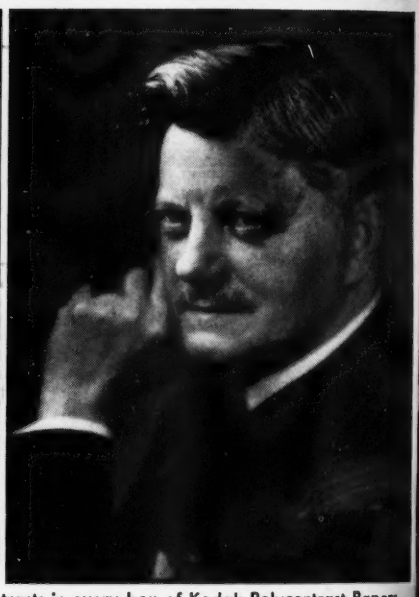
Kodak reports to industry







You get seven contrasts in every box of Kodak Polycontrast Papers.

The paper that takes negatives as they come

You're bound to run into difficult photographic situations—an available-light assignment in a foundry, or a long production line where shafts of sunlight coming through windows create vivid extremes of light and shadow. Usually you want to hold all details, come up with a full-scale, balanced print, regardless of difficulties, or the occasional small errors of judgment which dog the footsteps of almost everyone.

It's a fine thing to solve all your problems with *one* box of Kodak Polycontrast Paper. You always have the contrast grades you need to control the toughest of printable negatives. Both Polycontrast and Polycontrast Rapid give you *four* full-step printing grades, plus *three* intermediate half-grades —7 in one box.

The Kodak Polycontrast Filters that control contrast, can be kept close by the enlarger, for use whenever you need them. They produce grades 1, 2, 3, and 4, and half-grades 1½, 2½, 3½. By changing filters in "mid-print" you can even print two or more contrasts on a single sheet! A technique that solves problems of excessive density range with ease.

Even final print quality is easier to judge with Kodak Polycontrast Papers because they do not change appearance from one processing bath to the next.

Also, your prints on Polycontrast will tone beautifully in Kodak Brown Toner.

You can get Kodak Polycontrast or Polycontrast Rapid Papers in the popular F, N, G, and Y surfaces. See your Kodak dealer.

Kodak
TRADE MARK

EASTMAN KODAK COMPANY, Rochester 4, N. Y.